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The Physiotherapy Review

Volume 21 Number 6

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The Use of Physical Therapy Measures in Neurological Conditions

Bernard J. Alpers, M. D.

Introduction—This article is intended to appraise some of the physical therapy methods in common use in the treatment of neurological diseases in order to present the viewpoint of the neurologist in the use of these various technics, both as to availability and value. All of the methods which will be discussed are much better known to you than to me, and doubtless many technics unknown to or not utilized by the neurologist as well. For this reason I shall have to plead ignorance on many points, but I shall try to evaluate the more common types of physical therapy available to the neurologist. In this approach it seems wiser to discuss generally the various methods in common use in physical therapy than to discuss in detail the many neurological diseases for which physical therapy measures are available.

Massage.—The use of massage in nervous diseases is widely practiced and its advantages universally recognized. As a means of stimulating blood flow and maintaining muscle nutrition it has great value. The physiological effects of massage may bear passing scrutiny, for on the understanding of their principles, depends the intelligent use of massage in medicine. In deep stroking massage the therapeutic effect is produced in part at least by local contraction of the muscle. This is probably its least important effect. It has been found to assist in the removal of waste products of tissue metabolism, to produce dilatation of the capillary bed, to increase the red cell count temporarily, and to aid in the process of glycolysis in the muscles. Light massage in particular produces increase in the capillary bed and hence increased tissue oxidation. Whether this is produced by local effect or by the intervention of nervous mechanisms seems to be undetermined. The essential factor, supported by physiological observations too numerous to cite, is to the effect that massage acts physiologically on the organism by the media mentioned.

The immediate results of such massage are both relaxing and tonic. Gentle massage over the entire body produces a pleasant relaxation such as can be obtained by no other method. Given more vigorously it produces a tonic effect, which too frequently is produced by unskilled hands when relaxation is desired. The relaxing value of massage, as well as its physiological benefits, was well recognized by Weir Mitchell who made extensive use of massage and other relaxing forms of physical therapy in his rest cure for neuroses. While its use in structurally diseased parts needs no emphasis, its therapeutic value in neuroses needs reaffirmation. Since rest cures have for the most part been replaced by the more modern forms of psychotherapy, the massage and other physical therapy measures introduced by Mitchell have been neglected. The truth is, however, that massage in the neuroses is a valuable sedative. Light general massage given daily in neurotic patients has fallen into neglect, but its value is great and

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it should be revived. It is not of equal value of course in all forms of neuroses. It has particular use in cases of neurasthenia or of anxiety or exhaustion states with numerous somatic complaints. In the Weir Mitchell cure all neurotics were placed in bed, but even among ambulatory patients a tonic or sedative massage is of inestimable value and permits a lessened use of sedatives. The skilful use of light generalized massage in a tense, restless neurotic patient often results in complete temporary relaxation and complete body rest for the space of a few hours. It is regrettable that massage is no longer used in this way. Psychotherapy methods have outmoded the Weir Mitchell treatment, and what is often spoken of these days as a rest cure is in reality only confinement of the patient without the daily massage and hydrotherapy so essential in the true rest cure as devised by Weir Mitchell.

The use of massage in peripheral nerve disease also is important. It never should be given during the acute stages of neuritis, though it is recommended by some. There is nothing to be gained by the massage of tender muscles. Wholly apart from the discomfort to the patient, it is entirely contraindicated by the fact that it serves to stir up the neuritis which should be permitted to become quiescent. After the muscle and nerve tenderness have subsided, daily massage of the affected muscles is imperative in order to maintain good nutrition and to prevent or at least to impede the advance of muscle atrophy. It should be continued for long periods. In private practice this is quite practicable, but in hospital ward practice it is too frequently objected to on the grounds of lack of facilities. It is common experience that too great reliance is placed on drugs and too little on physical therapy measures in the treatment of neuritis. Yet I believe it can be said without fear of contradiction that there is as much if not more to be gained by means of massage, heat and electrical measures than by drugs, except of course for the relief of pain. Stimulation of the muscles by direct contraction, increase in the capillary bed and the removal of waste products by passive means in muscles unable to exercise normally are important reasons for continued massage until muscle function has been returned to normal.

Massage, supported by other forms of physical therapy, forms an invaluable feature in the treatment of peripheral nerve injuries. The problem of when to operate on nerve injuries of the arms and legs is difficult to assess, but there is common agreement on the fact that so long as improvement continues, operation should be deferred. In the conservative treatment of nerve injuries, short of operation, physical therapy constitutes the most important factor. Among the measures available, apart from orthopedic and surgical appliances, massage takes an important place. Given daily, it plays a real role in the maintenance of muscle nutrition while the injured or severed nerve is regenerating, though it plays no part of course in the actual nerve regeneration.

Both in neuritis and nerve injuries as well as in other diseases involving loss of muscle bulk by the severance of the nerve supply, the problem arises how long to maintain the massage. There can be no dogmatic answer to such a question, but it seems fair to say that it certainly should be maintained as long as improvement continues, for as I have already indicated, there is nothing to approach massage in value in maintaining the nutrition of paralyzed muscles. After improvement has ceased to occur, continuance of the massage will depend on the attitude of the patient and the enthusiasm of the physician. It is good policy to continue massage indefinitely for the maintenance of muscle nutrition, though of course nothing can be hoped for in the way of regeneration. Massage daily or every other day under these conditions seems to me to be a small price to pay for the benefits to be derived.

In other diseases of the nervous system massage plays a secondary role, though it may be used with great benefit as a purely symptomatic measure. It may give great relief in cases of Parkinsonism, though only of a temporary character to be sure, by producing subjective relief from the rigidity. Some Parkinsonian patients experience good relaxation for a few hours after gentle massage; others are irritated by it. The measure is worth trying in selected cases. In hemiplegia, massage appears to be of little value. It cannot overcome the central process responsible for the hemiplegia, and it has little value in relaxing locally the spasticity. Nevertheless, one finds occasional patients who seem to feel that it is of some aid, and therefore it should be used when it seems desirable. In poliomyelitis, massage is a good adjunct to treatment. It certainly should be continued as long as recovery appears to be taking place, and thereafter in accordance with the principles already outlined. It is a problem as to how long massage should be continued in such cases. Once it is evident that anterior horn cells are diseased, no amount of massage will cause a return of

their function. Hence it seems best to continue massage certainly while recovery is taking place and thereafter as a local stimulant in order to give all possible help to muscles which work under a handicap.

For similar reasons, the use of massage in chronic degenerative diseases such as the muscular dystrophies, progressive muscular atrophy, syringomyelia and amyotrophic lateral sclerosis offers little in the way of treatment except as a means of psychological comfort to the patient. One is apt to be too pessimistic in such cases, however, knowing that the anterior horn cell destruction cannot be remedied by massage or any other means at our command. Yet it seems to me we owe something to the comfort of our patients, and the prescription of tonic massage in such cases has a stimulating effect and at the same time maintains the nutrition of the diseased muscles. In this as in all medical matters, however, much will depend on the patient himself. Some will be content with the palliative benefits of massage; others will reject it because no assurance can be given them that it will cure the disease.

Finally, massage in the treatment of peripheral facial paralysis (Bell's palsy) appears to me to have been somewhat neglected. It is easily practiced by the patient two or three times a day but should never be carried out in the presence of a tender facial musculature. It should be started early and continued faithfully.

Passive Exercise.—Closely allied to the problem of massage is that of passive exercise of diseased muscles. Muscles which require massage are diseased muscles which are either completely paralyzed or partially weakened. The result of course is impairment of function manifested by the impaired movement at joints. It becomes important, therefore, in all diseases in which muscle weakness occurs to develop passive exercise of the muscles in order to prevent the fixation of joints in abnormal positions. The list of diseases in which such manipulations are necessary include hemiplegia, monoplegia, neuritis, nerve injuries, muscle dystrophies and a host of other peripheral and central nervous system disorders.

It is a good working principle that passive exercise of paretic or paralyzed parts should begin as soon as the acute process has subsided whether this be neuritis or a cerebral insult. It should be carried out simultaneously with massage and should consist of passive exercise of the affected muscles in the range of their physiological movements, chiefly to prevent deformities and to hasten if possible their ultimate recovery. For it appears to be certain that passive motion has essentially the same effect upon diseased muscles as has massage itself.

It seems fair to ask what we may expect from muscles which have been massaged and passively exercised. In the case of muscles which recover their function completely there has been a prevention of fixation deformity and a full return of power. A hemiplegic hand which has been massaged and passively exercised probably stands a better chance of complete recovery of fine finger movements than does a hand which has not had the benefit of such treatment. This is not to say that such manipulations cause a return of normal finger dexterity; that depends of course on recovery of the brain lesion. But in a case in which such a brain lesion goes on to complete restitution, the chances favor the hand properly treated. On the other hand, in the case of a limb which does not recover its normal function, passive exercise and massage serve the important role of preventing deformity, which is in itself a good recommendation.

Heat.—Among the other physical therapy measures available to the neurologist, heat is held in high esteem. It may be used in many forms ranging from the much-beloved but dangerous electric pad to modern short wave diathermy. It is used chiefly as infra-red and short wave diathermy, though of course other forms of heat are available. The mechanism of its action is not specifically known. Hyperemia of the treated parts with subsequent increase in nutrition and better oxidation of the tissues must certainly play a role, but whether this is the only factor is open to debate. It must play a sedative role of some sort, for its effect on pain is definite. The application of heat by whatever means results in increased blood flow, the dilatation of vessels, accelerated tissue metabolism, the more rapid removal of CO_2 from the tissues, the excretion of water, increased cellular activity as shown by more numerous evidences of growth, and by relaxation of the muscles. All these occur in the normal state; whether they are active in equivalent degree in diseased states is not definitely known.

Without heat the treatment of acute neuritis would be a difficult matter. Except for salicylates and opiates, the latter of which should never be used in neuritis, heat is the most valuable measure available for the pain found in disease of the peripheral nerves. Pain of course is the most urgent symptom, and while heat may not relieve it completely in most cases, it does

much to keep it under good control. It is an interesting fact in practical clinical experience that relief may be obtained by the use of various types of heat, and that what is good heat for one patient is bad heat for another. Generally speaking many measures must be tried. Wherever possible a lighted cradle or one of the more modern bakers with rheostat control should be used constantly in an acute neuritis. While this form of heat is not very penerating, it gives a soothing hot atmosphere which is decidedly beneficial and adds greatly to the patient's comfort. It has the further advantage that it can be turned on or off at will. Other forms of superficial heat have little value.

Of the more penetrating types of heat, infra-red and diathermy are the most valuable. I have found short wave diathermy to be almost invariably of no value in acute neuritis. It almost always increases the pain, except for a very occasional case which may be benefited. It has become my practice therefore to use no form of diathermy in the acute stages of neuritis. For this reason, diathermy should be reserved for cases of prolonged pain of a more chronic nature. More useful than diathermy is infra-red. This is a penetrating form of heat, though not as penetrating as diathermy. If used properly, it frequently gives good relief in cases of acute neuritis. Too frequently infra-red is used sporadically and in dosages not sufficiently large to be of much value. To be used efficiently an infra-red lamp should be placed in the patient's room in order to avoid exposure of the patient and to ensure sufficient dosage of heat. It should be administered twice or three times a day, given at different times along the course of the affected nerve at distances and for periods ranging from 15-60 minutes, depending on the patient's reaction. A single sporadic application of infra-red once a day for 15-20 minutes is almost valueless. It may give slight relief, but it fails to take full advantage of the possibilities of this form of heat when properly administered. Given adequately, infra-red affords temporary relief from pain. In some cases, infra-red increases pain just as does diathermy, but in most cases it can be used to good advantage.

Infra-red is useful also in the treatment of peripheral facial paralysis, particularly in cases associated with tenderness over the facial nerve. If the eye is carefully protected infra-red can be given daily with safety and is helpful in curing Bell's palsy. By this I do not mean to imply that infra-red has a special value in the early treatment of Bell's palsy. Probably any form of dry heat would be equally as efficacious. Furthermore, some patients react favorably to infra-red, others to other types of heat, and the exact formula must be worked out individually in each particular instance.

Apart from cases of acute neuritis heat has relatively little value in the treatment of neurological disorders though it is nevertheless an important adjunct. In cases of pain due to structural disorders such as osteoarthritis of the spine, tumor and similar disorders, heat has little value even as a palliative. Nor does it have much use in cases of degenerative disease of the nervous system. It is this efficacy of heat in acute pain which suggests that its value depends on its effect by means of a local hyperemia.

Heat is advocated in the treatment of poliomyelitis in order to aid function, on the principle that the paralyzed limbs of poliomyelitis are cold and external dry heat aids function by dilatation of the vessels. For the same reason it is used in degenerative disorders with subsequent limb paralysis. Its beneficial effect on local tissue reactions leads to its use in peripheral nerve injuries where it is believed also to have a beneficial effect. Undoubtedly in these various clinical states it has real value which it is difficult to appraise.

Electricity.—The electrical current has been used in medicine for many purposes, both as a sedative and a stimulator under circumstances which vary widely. Static galvanic or interrupted current is used to obtain the desired effect.

The value of the static current to the neurologist is limited quite definitely to the psychogenic field. It was employed extensively in the Weir Mitchell rest cure in order to secure good muscular relaxation. It has good value in relaxing muscles as attested by its use in sprains and other muscle conditions, but its field of neurological usefulness seems limited from this standpoint because of simpler means of securing muscle relaxation. It has one important value if properly used. I refer to its use as a suggestive measure in cases of hysteria. The hysterical patient, among other features, is characterized by great suggestibility. In cases of hysterical blindness, paralysis, aphonia or other conversion symptoms the static spark or brush serves as an invaluable means of curing a particular hysterical episode, provided it is preceded by sufficiently strong suggestion before the spark is given. It is of course only one means of suggestion open to hysterical patients, and it does not work in every instance, but when it is successful, the result is quite dramatic.

Interrupted currents of one kind or another are much more useful than static sparks in general neurological practice. Their therapeutic effect is mediated through the excitation of muscle contraction and the stimulation of tissue cells by increasing cell permeability to ionic penetration. Interrupted currents may be galvanic, sinusoidal or alternating, or combined unidirectional and alternating and may be given in many ways. Equally useful is the constant or galvanic current which is given in many different conditions. Its action is produced by the so-called polar effect consisting of ionic transfer with an acid reaction at the positive pole and an akaline reaction at the negative pole. This polar effect is produced only under the electrodes. In addition, observation of the galvanic skin reaction with resulting hyperemia demonstrates clearly an effect of the galvanic current on the vessels. The uses of galvanism will be considered subsequently.

A few words concerning technic may not be amiss. It seems to be generally accepted that muscles stimulated by electricity should be made to contract slowly in the direction of their normal function. It seems to me that too much has been made of the gradual contraction hypothesis. A normal muscle does not contract gradually. It seems better to state the principle in such a way as to indicate that violent contractions should be avoided as being unphysiological in nature, and that simulation of normal muscle contraction is the goal to be desired.

The greatest field of usefulness of electricity in structural neurological disorders lies in the field of the peripheral nerves, though it has its distinct values also in paralysis from other causes. The choice of current is a matter of great controversy and personal opinion, and heated arguments have been spent on the value of galvanic versus sinusoidal or other forms of current. In the paralysis of a limb or of isolated muscles due to peripheral neuritis or nerve injury, the galvanic current is on the whole most useful. It should never be given without a complete examination of the degree of each muscle response, or without knowledge of whether reaction of degeneration is present. It should be applied daily after tenderness of the nerve and muscles has disappeared and continued as long as muscle weakness persists. Its value probably is derived in large part from the value of the muscular contraction which accompanies it. In both nerve injuries and neuritis the conditions of treatment remain the same, once atrophy has developed, and the indications of treatment are similar. Electrical treatment in the form of galvanism should be carried out for long periods. In cases in which continuous galvanism is painful, more soothing interrupted currents may be used. Here let me remark that the tendency appears to be toward discouragement if no striking results are visible after a short time, but it should be remembered that in the case of atrophied muscles there has been complete or almost complete interruption of the nerve and that regeneration is a slow process occurring no faster than 1 cm. a month. Under ordinary circumstances most cases are treated "in the dark" so to speak, and therefore it is well to follow the principle that no case receiving electrical therapy should fail to have an electrical examination at least once a month. In this way, actual progress may be charted.

The electrical current is particularly valuable in cases of Bell's palsy. I still believe that it is best to wait 10-14 days before electrical treatment is begun, on the assumption that in most cases Bell's palsy is the result of a true neuritis and nothing can be gained by stimulating an inflamed nerve. In a few instances I have been forced to agree against my better judgment to the use of sinusoidal current from the onset in cases of Bell's palsy and in these instances full recovery occurred. I firmly believe that in these cases full recovery would have occurred in any event. Generally speaking, no case of Bell's palsy should be treated without first knowing the exact reaction of the muscles to stimulation. Galvanic current in such cases will be most useful. It almost seems superfluous to warn that if contracture occurs all electrical treatment should be stopped.

The use of electrical therapy in hemiplegia has been advocated by many authors. Thus cerebral galvanism has been extolled as an aid in the recovery from hemiplegia, and cerebral diathermy has been said to cause an increase in circulation and hence a greater tendency to improvement in cases of hemiplegia. While there has doubtless been some success with both these methods, I doubt whether electrotherapy applied to the brain is sufficiently effective to influence the process in one way or another. In the acute stages of the hemiplegia the application of current may be harmful, while in the later stages there is no possibility of restitution of nervous tissue to normal and the methods advocated have no sound physiological basis.

In other diseases such as progressive muscular atrophy, amyotrophic lateral sclerosis and similar wasting disorders, electrical stimulation of

the muscles is useful as a means of producing contractions and therefore maintaining nutrition.

SUMMARY

Physical therapy, therefore, has a wide range of usefulness in neurology, and this paper merely sketches some of its spheres of value. There are many important matters which have not been included. The value of physical therapy in cerebral birth conditions, its use in the training of tabetics by the too neglected Fraenkel exercises, the value of hyperpyrexia—to mention only a few topics—are in themselves of great interest. It seemed more important to me however to indulge in a general reaffirmation of faith in the principles of physical therapy as applied to the more usual problems of neurology and to leave the other topics for future discussions.

Orthopedic Surgery and Physical Therapy

John Royal Moore, M.D.

Orthopedic surgery is a divison of general surgery and deals primarily with the lesions of bones, joints, tendons, muscles, bursa and fascia. These structures make up the skeletal and locomotor framework of the human body. Their health depends primarily upon the maintenance of normal function. Lesions disturbing function may be divided into two main groups: (1) congenital and (2) acquired.

Congenital Lesions.—Congenital lesions are either primary or secondary, depending largely upon the time of their occurrence. Those occurring before the fetus is fully formed are termed primary congenital deformities, and there are two principal theories accounting for their origin: (1) heredity and (2) nutrition. The nutritional group are by far the most common. They are thought to be due to faulty implantation of the ovum (Mall). The ovum receives a poor attachment to the uterine wall, and as a result, the fertilized egg is poorly attached to the wall and the growing structures derive poor circulation, and therefore faulty nutrition. Development may go to term, or miscarriages and abortions may occur. Anomalies vary in their degree and are characterized by absence of bone, or complete parts, extra bone and multiple parts. Extreme deformities, such as monsters, may occur.

Secondary congenital deformities occur after the fetus is fully formed and are due to abnormal forces being applied to the fetal parts. Faulty position of the fetus, small pelvis, uterine tumors, etc., may be causative factors. These deformities comprise by far the most frequent of the congenital group. Illustrations are congenital club foot, wryneck and congenital dislocation of the hip.

Acquired Lesions.—In the acquired group we have (1) traumatic lesions, (2) neuromuscular lesions, (3) metabolic lesions, (4) endocrine and (5) tumors.

(1) In the first class, we have acute trauma which includes fracture, tendon tears, muscle tears, bursa injuries, facia injuries, joint injuries and chronic trauma under which come the various postural problems in which degenerative changes occur in joints, bursa, tendons, fascia and bones.

(2) Under the heading of neuromuscular lesions we include the lower motor neuron types such as poliomyelitis, transverse myelitis, amyotonia congentia, and the upper motor neuron types which include true spastics, cerebral ataxic and the athetoids. Although changes in these groups occur in the muscular and nervous systems, secondary changes occur in bones, joints, bursa and fascia.

(3) Metabolic lesions are due to metabolic disturbances such as diabetes, scurvy, ricketts, disturbances in the lipoid metabolism and hemo-

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Read before the Third Annual State Convention of the Pennsylvania Physiotherapy Association, April 17, 1941.

philia. These affect the bones, joints, muscles, etc.

(4) The importance of the endocrine glands is becoming more and more emphasized. We have acromeglia, cretanism, Von Recklinghausen's disease as examples.

(5) Tumors occur in bones, joints, muscles, tendons, bursa and fascia. They are benign or malignant.

The importance of the proper diagnosis obviously is essential. The elimination of the cause, if possible, becomes the first requirement. Restoration of normal function, or at least, adequate function, is next in order. The role of physical therapy becomes more and more impressive, provided, of course, that it is directed intelligently and effectively.

Briefly the purpose of physical therapy may be divided under two headings: (1) physical therapy for the purpose of correction, and (2)physical therapy for the maintenance of correction.

In the first class, physical therapy for the purpose of correction, it may be the sole form of treatment. The problem first must be thoroughly analyzed by the physician, and the attention of the physical therapist must be drawn to the structures in need of training. The physical therapist must then apply all of the measures at his command. The physician usually fails if he attempts to employ his resourcefulness independent of the skilled physical therapist, and on the other hand, the physical therapist is usually a failure—and an extremely dangerous one—if he attempts physical therapy independent of the medical profession. One is entirely dependent upon the other.

In the maintenance of the correction, both physician and physical therapist usually meet the greatest difficulties. The dramatic changes which are a constant stimulation during the correction period usually are lost during the period of maintenance. Both physician and physical therapist tend to tire of the monotony of this period. Recurrence of deformities and failures of other types inevitably occur. It is at this point that the public becomes annoyed and distrustful of both groups.

In closing, it is important to emphasize the fact that physical therapy and orthopedic surgery are closely related. They each depend on one another for success. The importance of a correct diagnosis and the proper instruction as to treatment depends primarily on the physician. The means of attaining the end depends largely upon the ingenuity, ability and effectiveness of the physical therapist.

The Revival of Heliotherapy

Worship of the sun was known to the ancients long before the Christian era and was practiced not only by the barbarian races but by cultured Egypt. We are told that the father-in-law of Tutankhamen gave up other gods for the worship of the Sungod Ra and built a new city and temples to his honor. The Greeks and Romans, while not worshipping the sun, understood its health-giving properties. Hippocrates practiced heliotherapy on the island of Cos in the fourth century B.C., and from 130 to 200 A.D. it was practiced at Rome by Celsus and Galen. Cicero has described for us the solaria built at the villas outside Rome. The solarium was usually a flat terrace or roof designed to trap the maximum of sunshine. The Druids in our own islands were also sun worshipers. The cult of the sun apparently was regarded as pagan, for with the advent of the Christian era sun worship fell into abeyance. It is only comparatively recently that its value has again been recognized.—*From "Ultraviolet Light, X-Rays and Radium as Therapeutic Agents" by Patrick MacCarvill. Published in Irish J. Med. Sci., Feb.* 1931.

Crippling Sequelae of Static Defects of the Feet

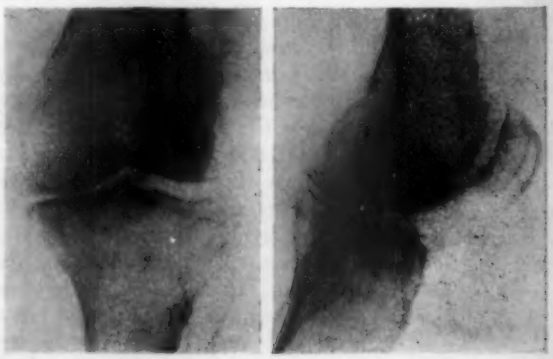
A. Leo Brett, M.D.

A discussion of so simple a phase of orthopedics as the relation between a weak or pronated foot and disorders elsewhere in the body is approached with some hesitancy. Undoubtedly all physicians today would claim to recognize in the disabled foot a potentiality of disturbance in other parts of the body. Yet, if this fact is so well established, why does the orthopedist continue to see almost daily proof of the failure on the part of physicians to connect the disabled foot with other lesions? Why is the middle-aged, obese person with aching muscles of the legs and stiffness of the knee-joints still treated for "rheumatism," when the symptoms may be referable to a weak or pronated foot? Why does the connection between a painful back or hip and disabilities of the feet go unrecognized? In the face of the apparent disregard of this phase of orthopedics, a review of the subject does not seem amiss at this time.

Rather startling statistics in this connection were brought to light when the writer recently reviewed the files of his private practice for the seven-year period from January 1934 to January 1941. The number of cases in which disorders of the knees, legs, hips or back were connected with weak, pronated or unbalanced feet totaled 1250. In other words, approximately 15 such cases were seen each month over a seven-year period, and this number of cases is exclusive of those patients who were treated at clinics. Knee symptoms were by far the most common, and 694 patients complained of pain and stiffness of this joint. The patients complaining of back pain numbered 478.

Fig. 1. Appearance of the legs and feet in the typical obese woman patient complaining of symptoms of the knee-joint.

The type of patient who is most often seeking relief from symptoms of the knee-joint, which prove to be referable to unbalanced feet, is the woman just beyond middle age, obese and sedentary in habit (Fig. 1). She presents a typical history. First, she experienced muscle fatigue and pains in the calves of the legs as well as a burning sensation of the feet; then pain appeared on the inner side of the knee; and eventually there was local tenderness in the region of the internal cartilage and margins of the joint. Gradually the knees became stiff so that the patient had difficulty in climbing stairs and rising from a chair. Some patients complain of an acute pain occurring at intervals and accompanied by a sensation of "something giving way" in the joint, symptoms that are due to the pinching of the semilunar cartilage. Advanced cases present the typical picture of an arthritic joint, with swelling, fluid in the joint, heat, pain and tenderness. In the late cases, crepitus may be elicited and may even be audible, and frequently it is possible to palpate the hypertrophic arthritic changes (Fig. 2, A and B). Patients often do not consult



A B

Fig. 2. Hypertrophic arthritic changes in an advanced case of knee strain due to unbalanced feet.

270 Commonwealth Avenue, Boston, Mass.

a physician until this advanced stage has been reached.

One of the features that stands out prominently in these cases is the patient's lack of desire to move about, due to the discomfort and fatigue that she experiences on activity. As a result, the circulation is sluggish and intestinal stasis with the consequent susceptibility to absorption becomes a factor when the patient in her unwillingness to move is careless in her habits.

More rarely seen than the patient with symptoms of the knee-joint, but by no means infrequently, is the patient with low back pain that is traceable to a foot defect. So widely separated are these two parts of the body that the connection between back pain and weak feet frequently is overlooked. Both the sacro-iliac joints and the lower lumbar spine may be affected, the involvement varying from a slight muscle strain to an acute myalgia or arthritis, depending upon the duration of the foot strain.

Fig. 3. Normal standing position showing the feet parallel and the toes pointing straight ahead.

Fig. 4. Standing position with unbalanced feet. Note the eversion and toeing-out and line of weight-bearing.

Occasionally a patient is seen with symptoms in the hip-joint that are referable to a defective foot. This joint, however, is not so easily affected by faulty statics owing to the fact that it is of the ball-and-socket type and hence exceptionally stable. It is only when a static strain from weak feet has been long continued that arthritic changes develop in the hip-joint.

The importance of recognizing, at the first consultation, that the cause of the local symptoms in the knee, hip or low back lies in weak or pronated feet is obvious. The connection may be readily seen when the feet are glaringly unbalanced, but it is likely to be overlooked in the case of the moderately weak or pronated foot, particularly if the patient complains only of local symptoms elsewhere. Upon examination, the deviations of the unbalanced foot from the normal foot are at once apparent. In the normal standing position the feet are parallel and the toes point straight ahead (Fig. 3). The weak or unbalanced foot, on the contrary, is everted at the astragalo-scaphoid joint, the toeing-out amounting to 15 or 20 degrees (Figs. 4 and 5). The strain of weight-bearing is no longer borne by the outer longitudinal arch, which is so constructed that it provides a stable basis, but by the inner and weaker component of the longitudinal arch. In a normal foot subjected to such strain, the muscles and ligaments give way in time, and even the joints themselves may come to occupy new positions.

As the result of this unbalanced state of weight-bearing, the entire equilibrium of the body is disturbed. The knee feels the strain acutely, and the low back and hips likewise are involved. A knock-knee strain develops and the muscles on the inner side of the knees as well as the internal lateral ligament become stretched. With long continued strain, the joints become irritated and a mechanical arthritis develops. Owing to the laxity of the internal lateral ligament, to which is attached the semilunar cartilage, the meniscus may slip between the articular surfaces when the joint space widens. (In view of the close connection between the internal semilunar cartilage and a weak or pronated foot, a mild cartilage derangement often is relieved by correcting the defect of the foot).

The development of the weak or pronated foot usually is due to a combination of factors. One of the fundamental causes is the combined loss of muscle tone and superincumbent bodyweight which so often is seen in middle life

Fig. 5. Pronated feet.

when a person becomes less active physically. Extrinsic factors also play an important part in the collapse of the foot. The ill-fitting shoe with pointed toes and high heels, commonly worn by women, is one of the foremost causative factors of a weak foot. Under the constriction of the unyielding, narrow, pointed shoe, the toes are unable to spread and function properly. In time, painful callosities, corns and bunions develop, and the woman in her effort to feel stable and avoid pressure on tender areas everts and pronates the feet. Ample evidence of the important part that the shoe plays in the development of the pronated foot is brought out by the fact that women sufferers from foot defects far outnumber men.

The fact that people do not know the correct position of the feet in standing and walking also must be considered in the etiology of the unbalanced foot. Persons of middle age today were taught in their youth to walk with the feet turned outward and with the limbs rotated externally.

Occupations that necessitate the persistence of passive positions for long periods or that require the carrying of heavy loads expose the feet to strain. Foot defects from over-use are commonly seen in policemen, waiters, clerks and cooks.

Less frequent causes of the weak foot are disease and trauma. It is well known that in the presence of disease the joints may assume faulty positions and that muscle and ligamentous support may be weakened. Unless these malpositions are corrected they tend to remain permanently. Foot defects from trauma are seen when the bony structures are actually damaged, or when there are changes in position as the result of injury. Muscle tone also may be lowered from inactivity or from immobilization of an extremity in protracted illness or following trauma.

Once it has been established that disturbed mechanics due to unbalanced feet are responsible for the lesion in the knee, hip or back, the first step in treatment is to restore proper static relations by correcting the foot defect. At the same time, if excessive weight is a factor in the production of foot strain, dietary measures are instituted. It is surprising how much relief this treatment may afford even in cases with advanced arthritic changes.

The nature of the corrective measures varies with the degree of involvement of the foot. In all cases a well fitting shoe, that is, one with a fairly low, broad heel, a straight inner border, and sufficiently wide to allow all the toes to function, is essential. In early cases normal function may be restored to the foot by the patient wearing some mechanical arrangement that forces the foot into correct position and by exercising the foot to reestablish muscle and ligamentous tone. Tilted heels and soles on the inner side of the shoe, pads or plates are useful adjuncts. The Whitman plate is a most satisfactory type of support, which is so well known that a description is unnecessary. It is most important that the orthopedist and the patient should regard the brace as merely a temporary support which is to be discarded when the patient consciously stands and walks properly.

If the foot is extremely painful, corrective measures should not be undertaken until the acute process has been allowed to subside through rest. In cases of rigid flat foot resulting from a long continued strain, the usual measures of treatment cannot be carried out until the limitation of motion has been overcome by stretching the foot and strapping it in the position of adduction. Several strappings may be necessary before the motion is entirely free. In severe cases the adhesions must be broken up under an anesthetic, and a plaster cast may be required to hold the corrected position for a time.

SUMMARY

There is need for focusing more attention upon faulty body statics, originating in weak or unbalanced feet, as the cause of the so-called hypertrophic arthritis of the knee-joint and low back strain. If this causative relation were more generally appreciated, the number of cases of hypertrophic knees and low back pain would be greatly reduced, for it is possible, by recognizing early and eliminating the factors entering into development of the pronated foot, to prevent faulty body mechanics.

A Portable Treatment Table for Muscle Examinations and Exercises

Margaret Ladd

The 1939 poliomyelitis epidemic in South Carolina found a good many nurses, physicians, and other agencies unprepared for it, but emergency programs were sponsored by the National Foundation for Infantile Paralysis, Social Security Funds and the Division of Crippled Children in the Federal and State Governments.

During the acute stage, emergency treatments were devised in making braces and splints, and ingenious methods for caring for these indigent cases were accomplished. But when the long period of muscle reeducation started, it was difficult to find a means whereby they could be uniformly graded in their muscular progress and an accurate record kept regarding them.

Some form of a table had to be used in each home, but in many the kitchen table was a box or a table that was either too small or too unstable to hold the child. The floor was full of cracks, splinters and lumps, as well as the porch. However, treatments had to be taught and given on whatever the mother had to use daily and not what could be arranged to be brought in.

Plywood was the solution for home use. The poorest home could get a piece of that or some form of a smooth surfaced board. In the homes where they could be taught to pad and cover it with linoleum or oil cloth this was done, but for a standard muscle examining table something had to be devised which could be carried in the nurse's car. Single plywood was not strong enough so triple plywood was obtained and cut into three sections so that they would overlap each other and fold, similar to the silencer pads used on dining room tables. Each section was three feet long and four feet wide. These were held together with adhesive tape, reenforcing them so the upper crossed over the center and the lower one folded under. Hinges were undesirable and would not hold.

The surface to be used was covered with the filler of a blanket (bought at a chain store for 39c). It was soft, white cotton that was the exact size. This was covered with black oil cloth because it is lightweight, serviceable and washable. The pad was placed on one side only and the oil cloth covered the anterior and posterior surfaces. The seams all around had to be sewed by hand with heavy linen thread. The oil cloth should not be cut but rather kept in one piece as it serves to hold it together. Two additional patches (3" by 5") were sewed on equal distances on each of the sections. These serve two purposes: (1) they help hold the carrying canvas straps in place, and (2) they can be used to insert either young sapling trees or lead pipe to reenforce it for strength when used between boxes or on too small a table.

The canvas strapping was obtained from an old venetian blind. The entire weight of the treatment table is only fifteen pounds and it can be carried with ease for some distance. (I have carried it two miles over muddy roads that were impassable to drive.) It has been used for many other purposes, too, such as a delivery and operating table or an emergency stretcher, as well as being used for a picnic table. In fact, it is indispensible in my daily work. The cost includes:

Triple Plywood	$1.98
Cotton Filler	.39
Oil Cloth	.90
Strapping	.20
Total:	$3.37

The padding makes it comfortable and the oil cloth makes it serviceable and washable. The use of it for treatments and muscle examinations particularly makes it possible for use in any home. It will exactly cover a cot or single bed and can be used on the top of any size bed, of course, as well as on the top of any size table or suspended between boxes or saw horses. Also, I have used it on the porch and stood on the ground, thus making it the exact height for ease. This simple treatment table has proved to be such a valuable piece of equipment in my daily routine that it may be worthwhile for others to know of it.

Orthopedic Consultant Nurse, 513 West Palmetto Street, Florence, South Carolina, Box 805.

A Muscle Test for Patients with Spastic Paralysis

Adelaide L. McGarrett and Sarah C. Johnson

In the majority of the cases which we have treated in the Cerebral Palsy Clinic, spasticity has been the predominant factor. We all know that the basis for treatment of this type of case is muscle education. It was not long after the clinic was opened that we felt a great need for a method for charting muscle response, character, strength, quality and possible trainability. We wanted to know more than we had been able to learn by watching the patient's movements and manner of walking. We needed to record the presence of contracture. We wanted to know how much spasticity actually existed. We wanted to determine when a foot was in equinus because of spastic plantar flexors, and when it was because of flaccidity of the dorsi flexors overpowered by strong plantar flexors. We wanted to know when a muscle, though extremely spastic, was really quite weak when put to an adequate test of strength. These and numerous other questions arose, and so we started trying to formulate a suitable method for charting the response of our patients to muscle tests.

We have had a rich source for investigation. Of 429 different patients in 1940 probably at least 340 or 350 presented a predominance of spasticity. Of course a great many of these were clinic review patients, and we were greatly limited in our time for examining and treating them. We were unable to go through a complete muscle examination on each one. However, we did have a sufficiently large number to present a great many of the obstacles which manifest themselves in trying to give any type of muscle test to a spastic patient.

This, then, makes clear the reason why we could not use a muscle examination devised for cases of poliomyelitis. A muscle chart for spastics should include more than just a record of muscle strength. A spastic patient presents a number of obstacles which must be clarified in a good record in order that the best possible treatment may be administered. There were certain salient points which had to be taken into consideration. We shall mention a few:

1. The presence of spastic-normal muscles
2. The presence of spastic-weakened muscles
3. The presence of nonspastic—normal muscles
4. The presence of nonspastic-weakened muscles
5. The presence of spastic and flaccid muscles
6. The presence of contracture due to:
   (1) spasticity
   (2) imbalance of muscle power
7. The presence of deformities
8. The patient's chronological age
9. The patient's mental age
10. The lack of isolation of individual muscles

With these points to be considered firmly in mind, we went about our task with a primary purpose. Like the muscle examination devised for use in cases of poliomyelitis, we wanted a system for following the progress of the patient. By establishing a system for grading the patient, we would be better equipped to choose the exercises for treatment. By determining what muscle groups needed training we would be able to proceed with these certain objectives for giving exercises:

1. To correct and prevent deformities together with proper splinting
2. To reduce spasticity
3. To balance muscle power
4. To improve coordination—gross and finer
5. To increase stability sitting, standing, and walking

Not only has the muscle examination served as a basis for progress records in itself, and helped us to determine what exercises to give, but it also has been useful in cases in need of surgical procedures. In some cases surgery has not been successful. After relieving spasticity by neurectomies or other means it has been discovered that the opposing groups were not as strong as they had been thought to be, or the group operated upon has been found to be weak as well as spastic. A muscle examination can aid materially in ascertaining the advisability of surgery.

Physical Therapists, Cerebral Palsy Project, James Whitcomb Riley Hospital, Indianapolis, Indiana; Division of Services for Crippled Children, Indiana State Department of Public Welfare.

Read at the Institute on Cerebral Palsy, Hurdy Hall, Indiana University Medical Center, Indianapolis, May 9 and 10, 1941.

MUSCLE CHART—CEREBRAL PALSY CLINIC

DEPT. PUBLIC WELFARE—James W. Riley Hospital, Indianapolis

NAME HOSP. NO. DIAG.

NO. BIRTH DATE CR. I. Q.

BRIEF DESCRIPTION AT FIRST VISIT:

LEFT								LOWER EXTREMITY MUSCLE GROUPS				RIGHT					
					Contrac.	Spasticity	Strength		Strength	Spasticity	Contrac.						
								HIP EXTENSORS									
								" FLEXORS									
								" ABDUCTORS									
								TENSOR FASCIA LATAE									
								HIP ADDUCTORS									
								" EXT. ROTATORS									
								" INT. ROTATORS									
								SARTORIUS									
								KNEE EXTENSORS									
								" FLEXORS									
								DORSI FLEXORS									
								PLANTAR FLEXORS									
								EVERTORS									
								INVERTORS									
								TOE EXTENSORS									
								" FLEXORS									
								GT. TOE EXTENSORS									
								" " FLEXORS									
								LENGTH LEG									
								CIRCUM. THIGH									
								(½ DIS ASS. TO MID. PAT.)									
								CIRCUM. CALF									
								(6" FROM MID. OF PAT.)									

Posture, Gait and Surgery:

Posture, Gait and Surgery:

Posture, Gait and Surgery:

KEY:

STRENGTH: O—Gone T—Trace P—Poor F—Fair G—Good N—Normal

SPASTICITY: S—Slight M—Mild C—Considerable

CONTRACTURE: S—Slight M—Mild C—Considerable

LEFT									RIGHT									
						Contrac.	Spasticity	Strength	UPPER EXTREMITY MUSCLE GROUPS	Strength	Spasticity	Contrac.						Grasp, Grip and Surgery:
									SH. ELEVATORS									
									" ABDUCTORS									
									" ADDUCTORS									
									HORIZ. ABDUCTORS									
									" ADDUCTORS									
									SH. EXTENSORS									
									" FLEXORS									
									" IN. ROTATORS									
									" OUT. "									
									ELBOW EXTENSORS									Grasp, Grip and Surgery:
									" FLEXORS									
									SUPINATORS									
									PRONATORS									
									WR. EXTENSORS									
									" FLEXORS									
									" ABDUCTORS									
									" ADDUCTORS									
									FINGER EXTENSORS									
									" FLEXORS (Long)									
									" " (Short)									
									" ABDUCTORS									
									" ADDUCTORS									
									THUMB EXTENSORS									Grasp, Grip and Surgery:
									" FLEXORS									
									" ABDUCTORS									
									" ADDUCTORS									
									" OPPOSERS									
									LENGTH OF ARM									
									(Acromium to Tip Mid. Fin.)									
									CIRCUM. UPPER ARM									
									(Deltoid Inser.)									
									CIRCUM. LOWER ARM									
									(2½" Below Lat. Con.)									
									ANTERIOR ABDOM.									
									" NECK									
									POSTERIOR "									

REMARKS:

Before proceeding with the content of our muscle examination we should like to mention one more point of its usefulness. We have found that by giving a muscle examination in the presence of the parents we have been able to show, perhaps easier than any other way, why muscle education is the essential treatment for their child. We all have heard these words many times as mentioned by Legg and Merrill[1], "No, he can't push it down much, but he pulls it up fine, so I let him do that, and then I put it down for him." By letting the parents observe the muscle examination and pointing out to them weaknesses, spasticity, etc., in many cases depending on the type of parents—they are much better able to carry out correctly and satisfactorily the suggestions we give them regarding the best possible home treatment. Of course this should be done only by an experienced examiner.

Now we shall proceed to the muscle examination itself. We have included in our muscle chart spaces for recording the presence and estimate of the amount of spasticity and contracture. We found it necessary to determine the amount of spasticity and contracture first before testing for strength. As pointed out earlier a record of these is vital in completing the true picture of the spastic patient. Treatment should not be attempted until these are thoroughly noted. In testing for spasticity the patient is asked to take a position such as elbow flexion, and then the examiner suddenly attempts elbow extension. If the muscles catch and the elbow will not extend readily, there is spasticity present. The degree is determined by the amount of resistance. Only with experience can an examiner consistently grade spasticity. We found it difficult to find terms for grading, but we feel the ones we decided upon have worked out quite satisfactorily. You will find them in the key as:

S —slight
M—mild
C—considerable

Our tests for actual muscle strength are based upon the system used in the Harvard Infantile Paralysis Commission Clinic at Children's Hospital, Boston, as outlined by Legg and Merrill.[1] However, we have had to group the muscles by function rather than isolated individual muscles. This was necessary because of the great tendency for substitution of action. We feel that by testing for group function it is possible to get a fairly accurate test of power, and it is functional power in which we are interested.

Test movements are given in two ways as described in the Kendall[2] system. Either the patient initiates and completes a movement or the examiner places the part in the completed position and asks the patient to hold that position. Simple movements usually are done by the first method; but in test movements requiring a combination of actions, the examiner usually places the part in position.

We have chosen the Harvard system for grading muscle strength. As we feel the grade cannot be as exact as that for a poliomyelitis patient we find we can give a fairly accurate grade by this system. The grade cannot be as accurate, perhaps, because of the presence of spasticity in the muscle group being tested or its opposing group, or because of deformity or contracture. You will find on the muscle chart the key to the grading of muscle power:

O—Gone—no contraction felt.
T—Trace—muscles can be felt to tighten, but cannot produce movement.
P—Poor—produces movement with gravity eliminated, but cannot function against gravity.
F—Fair—can raise part against gravity.
G—Good—can raise part against outside resistance as well as against gravity.
N—Normal—can overcome a greater amount of resistance than "good" and locks the joint.

Space is provided for a record of surgery and for a brief word picture of the patient's posture, gait and ability to grasp and grip, which should be noted each time the patient is given a muscle examination. No muscle examination would be complete without these additional notes, and they should be carefully and thoughtfully recorded. We believe the intervals at which an examination should be given vary with the patient. Probably one or at the most two a year would be sufficient for a case which is entirely one of training.

Our muscle examination, of course, is still in its embryonic stage. However, it has been used with quite gratifying results. An examination of this type is absolutely essential in the efficient treatment of patients with spastic paralysis and this test together with a good and thorough performance test should give a most accurate picture of the patient.

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Ion Transfer (Iontophoresis)

Council on Pharmacy and Chemistry and the
Council on Physical Therapy

Direct or galvanic current, in addition to being used for muscle or nerve stimulation, may be used to deposit on or in the tissues ions of certain salts and charged colloid particles from solution. "Ion transfer"[1] is defined as the introduction of soluble salts into the tissues by means of direct current. The term "electrophoresis" applies to a similar movement of colloid particles which are electrically charged or which have absorbed charged particles. The salts of heavy metals such as copper, zinc or tin are frequently used, the positively charged ions moving through the tissues toward the cathode when the current is appropriately passed. Locally these ions may produce precipitation of protein, causing chemical destruction of the tissues. This form of treatment has been used in lesions of the mucous membrane in the practice of proctology, otorhinology and gynecology. The introduction of certain drugs into the tissues by the method of ion transfer (iontophoresis) may also be used to produce systemic effects.

The galvanic current is uninterrupted and unidirectional, and for therapeutic purposes the usual sources are the galvanic wall plate, the motor generator, the valve tube rectifier or the dry cell battery. The efficacy of ion transfer depends on greater penetration of medicaments into the tissue than is obtained by topical application. The depth and local concentration of the medicaments depend on at least two factors. First, although the solution of the medicament is an excellent medium for conducting the current into the tissues, the ions, once introduced, may either become reduced or oxidized to an inactive form or immediately precipitated as proteinates. Second, because of high velocity the ions may be readily eliminated by the body because they are continually swept into the systemic circulation by rapidly moving blood, so that their concentration is too low to be effective. These factors explain why the penetration of medicaments is limited to a few millimeters at most.

The following technic is suitable for introducing drugs by ion transfer: The active electrode should consist of material such as asbestos cloth, cotton gauze, stockinet or other suitable fabric resistant to tears, saturated with a solution of the desired medicament. The saturated fabric is wrapped closely around the part to be treated, and a strip or sheet of metal foil cut to the appropriate size and shape is wound over the fabric. The positive pole of the current source is connected to one end of the metal strip which is used to conduct the current evenly over the entire area treated. The negative pole is connected to a dispersive electrode applied to the patient's back, which completes the circuit. The dispersive electrode consists of a large, flat, moistened pad measuring about 10 by 12 inches. The direct current should be turned on and increased gradually until the desired milliamperage is reached, so that unpleasant effects caused by sudden increases are avoided. The rate and amount of the ion transfer may be regulated by the strength of the current and the duration of its flow respectively.

Individual tolerance to the treatment should serve as a guide in determining the strength of the current to be used. The initial treatment should not exceed 5 or 10 milliamperes for thirty minutes. At the conclusion of a treatment the current is reduced gradually to zero reading and turned off. The patient should remain quiet and warm for thirty to sixty minutes following a treatment; after this period he may resume his usual activities. Each treatment should be restricted to a limited area, such as one hand or one joint when several parts are involved. Three or four days appears to be the most satisfactory interval between treatments.

In the treatment of varicose ulcers, the foot and leg as high as the knee are wrapped appropriately in fabric saturated with medicament and the technic described is then followed. Under no circumstances should the moistened fabric or the metal plate be applied directly over the un-

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1. Although "ion transfer" is the preferred term, introduction of drugs by this method for the production of local or systematic effects is sometimes called "iontophoresis," "common ion transfer," "ionization," "medical ionization," "ionic medication" or "therapeutic ionization." It is electrochemically incorrect and clinically misleading to term this method "surgical ionization" when a caustic effect is produced.

healed ulcerated region. Treatment is usually given two or three times a week but in some cases may be repeated daily.

PRECAUTIONS

The following precautions in the application of ion transfer should be observed:

1. If the sensation of the patient's skin is not normal on test, the current strength must be proportionally selected and carefully controlled according to the size of the electrodes and the milliampere reading.

2. Electrodes must not be applied over denuded areas and must be very carefully applied over recent scar tissue.

3. Electrodes must be sufficiently large to avoid excessive current density.

4. The metal plate of the electrode must be evenly covered by the padding, leaving no bare edges in contact with the skin.

5. The pad covering the electrode must be evenly saturated with the appropriate solution.

6. The electrodes must be applied in good contact by means of even pressure. Tight bandaging, folds, creases and insufficiently moistened areas in the pads may cause nonuniform distribution of current, subjectively manifested first by a local burning sensation.

7. The conducting wires must be fastened securely to the electrodes, so that the metal of the wire tip does not come in contact with the skin.

8. The current must be increased slowly at the start; while the milliammeter registers flow of current, the switch must never be opened or closed sharply.

9. The patient must be instructed to report at once any excessive burning or pain. The judgment of patients as to sensation of burning or pain varies with the individual and, regardless of the milliammeter reading, no more current than the patient states is comfortable should be applied. A safe milliammeter reading must never be exceeded even if the patient states that he can stand more current. During a treatment, the milliammeter reading usually increases as skin resistance decreases; a decrease usually indicates that the pads have become partially dry. In remoistening of the pads the current must be turned off, after which the electrodes are removed, and the pads are moistened evenly and carefully reapplied.

10. The strength of the current must be decreased if at any time the patient complains of annoying sensations. If this reduced current does not provide relief, the current must be turned off, the electrodes removed and the cause of irritation determined.

ACETYL-BETA-METHYLCHOLINE (MECHOLYL)

A 0.2 to 0.5 per cent solution of acetyl-beta-methylcholine chloride (mecholyl chloride) may be introduced by ion transfer. (The Councils point out that a 1:1,000 (0.1 per cent) solution of histamine acid phosphate introduced by ion transfer will produce a nearly identical effect.) The disadvantages in administering mecholyl chloride by ion transfer are (1) difficulty in controlling the dosage, (2) costliness of the drug and (3) administration expense—it requires thirty minutes of an attendant's time.

From a review of the evidence now available, the Council on Pharmacy and Chemistry reached the following conclusions:

1. Local effects of mecholyl chloride on the extremities are best obtained when the drug is administered by the method of ion transfer.

2. General effects of mecholyl chloride may be observed during ion transfer, but these are less pronounced when the drug is given by this method than when the subcutaneous route is employed; general effects of a serious or dangerous nature have not been observed when the drug has been given by this method.

3. Mecholyl chloride may be used by this method without obvious harm and with considerable benefit in some cases of chronic ulcers, Raynaud's disease, scleroderma and certain vasospastic conditions of the extremities.

4. The drug used by this method appears to have a palliative effect on the discomfort in some cases of chronic rheumatoid arthritis.

The Council on Pharmacy and Chemistry decided that ion transfer as a method of administering drugs be recognized by the Council with the understanding that the application of the method must at present be reserved to those especially trained and further that the recognition of the method as such carries with it no implication of acceptance of its use for any particular drug.

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Do you read your membership letter? The activities of the Executive Committee, questions of policy, requests for opinions and other pertinent information is given to every member by this method. Although they are sent out as second class mail, because the expense of first class mail would be prohibitive, they are nevertheless personal letters to you. The number of inquiries received by the Executive Committee concerning the activities of the Association show that these membership letters are not being carefully read, for the information requested by members has already been sent to them. A great deal of time and thought go into these letters, and it is the responsibility of every member to read them carefully and absorb the contents.

The same is true of chapter letters. The material is sent to the chapter through the chapter secretary and should be brought up at the next meeting of the chapter. These letters are not for the chapter officers only. It is your privilege as a member to ask that there be a discussion of the chapter letter at the first meeting following its receipt.

The Association is yours and your elected representatives wish to keep you informed about the proceedings of the Association, and they wish to know if you approve or disapprove. This can be done either through expression of opinion at the chapter meetings, or, if a member-at-large, by a letter to the national secretary.

Read your membership letters and have your chapter secretary read the chapter letters at your meetings! This is important!

Apprentice Physical Therapy Aide

The United States Civil Service has been changed to include the rating of "Apprentice Physiotherapy Aide" with a salary of $1,440 per year. The qualifications as given in United States Civil Service Examinations Announcement No. 117 of 1941 (unassembled) are as follows: "They must have completed or they must now be registered and taking courses looking toward the completion of the full special condensed course leading to graduation from a school of physiotherapy meeting the standards established for the duration of the emergency by the American Medical Association. The names of students who obtain eligibility in this examination may be certified and offer of appointment may be made at any time their names are reached for certification during the existence of the eligible register, but such eligibles may not enter on duty until they have furnished proof of the successful completion of the physiotherapy course required.

"Except as provided above, only education acquired prior to the date or receipt of application can be considered for these examinations."

An amendment also has been made to United States Civil Service Examinations Announcement No. 117 (unassembled) as follows: "Age limit.—Applicants must not have passed their forty-fifth birthday on the date of receipt of application."

Red Cross Enrollment

The following announcement has been received from Red Cross headquarters: "*Acceptable for Service in the Army*: Men who meet the required standards will be enlisted and assigned to the Medical Department. Under existing regulations (or requirements or statutes) all Selectees and Enlistees are put (or placed) in the grade of Private and undergo a period of basic military training. Subsequently technologists (or men) are assigned to units and may be subject to promotion to noncommissioned grades or to specialist ratings commensurate with the duties performed and the ability of the individual to accept responsibility and within the vacancies in grades and ratings available under

funds allotted. Men who enroll and pass the necessary physical examination but who may later be found physically unqualified for military duty if and when their services are required by the Army, may be employed as civilians.

"Women who meet the required standards may be employed as civilians."

Children's Bureau Personnel

Several important changes in the staff of the United States Children's Bureau have been announced by its Chief, Katharine F. Lenroot. Martha M. Eliot, M. D., Assistant Chief of the Bureau since 1934, became Associate Chief in May 1941. She continues to collaborate with the Chief in developing and carrying out policies governing the entire field of the Bureau's work and to have special responsibility for the health work of the Bureau. Charles I. Schottland was appointed as Assistant to the Chief of the Bureau.

The Maternal and Child Health Division and the Crippled Children's Division have been combined as the Division of Health Services, with Edwin F. Daily, M. D., formerly Director of the Maternal and Child Health Division, as Director of the new division. Hart E. Van Riper, M. D., formerly Assistant Director of the Maternal and Child Health Division, is Assistant Director for Maternal and Child Health; and A. L. Van Horn, M. D., formerly Assistant Director of the Crippled Children's Division, is Assistant Director for Crippled Children.

Dr. Robert C. Hood, formerly Director of the Crippled Children's Division, resigned from the Children's Bureau in June and is now Director of the Maternal and Child Health Division, Florida State Board of Health.

Arthur Roosevelt Bowles

Arthur Roosevelt Bowles, M. D., died on September 3, 1941, in the City Hospital, Indianapolis, Ind. Since October 1939, Dr. Bowles had been inspector on the staff of the Council on Medical Education and Hospitals of the American Medical Association. In this capacity he conducted the inspections and devoted considerable time to maintaining the standards of physical therapy schools.

A specially equipped Functional Training Room for poliomyelitis patients has been opened at the the Boston Children's Hospital, as a memorial to Dr. Arthur T. Legg, who was chief of the Harvard Infantile Paralysis Commission from 1916 until his death in 1939.

Exhibits

The American Physiotherapy Association has recently shown exhibits as follows:

(1) American Congress of Physical Therapy, Washington, D. C., Sept. 1 to 5: Model of a therapeutic gymnasium showing equipment utilized in physical rehabilitation.

(2) American Hospital Association, Atlantic City, N. J., Sept. 15: Miniature model of a pool for therapeutic exercises, and articles reprinted from the Review.

(3) National Society for Crippled Children, Louisville, Ky., Oct. 4: Miniature model of a pool for therapeutic exercises, and articles reprinted from the Review.

(4) Michigan Society for Crippled Children, Saginaw, Mich., Nov. 6: Miniature physical therapy department, posters on the treatment of cerebral palsy, and articles reprinted from the Review.

Index to Current Literature

Amputations

Amputations in Diabetes Mellitus and Peripheral Vascular Disease. Council on Physical Therapy, J.A.M.A., Sept. 27, 1941.

Amputations: Rehabilitation. Council on Physical Therapy, J.A.M.A., Oct. 11, 1941.

Anterior Poliomyelitis

Infantile Paralysis. C. E. IRWIN, M. D. Crippled Child, Oct. 1941.

Multiple Cases of Tonsillectomy and Poliomyelitis. CARL E. KRILL, M. D., and JOHN A. TOOMEY, M. D. J.A.M.A., Sept. 20, 1941.

An Evaluation of Physiotherapy in the Early Treatment of Anterior Poliomyelitis. H. R. MCCARROLL, M. D., and C. H. CREGO, JR., M. D. J. Bone & J. Surg., Oct. 1941.

Apparatus

A Splint to Increase Hip and Knee Motion. WILLIAM J. TOBIN, M. D. J. Bone and J. Surg., July 1941.

Infantile Paralysis. C. E. IRWIN, M. D. Crippled Child, Oct. 1941.

The Splinting of Compound Fractures. FRANK J. COX, M. D. J.A.M.A., Oct. 11, 1941.

The Manufacture of Artificial Limbs. Council on Physical Therapy, J.A.M.A., Oct. 25, 1941.

A Simple Appliance for the Correction of Gross Displacement in Tibial Fractures. H. K. CHRISTIE, F. R.C.S. J. Bone and J. Surg., Oct. 1941.

The Conservative Treatment of Serratus Palsy. JOSEF WOLF, M. D. J. Bone and J. Surg., Oct. 1941.

Arthritis and Rheumatism

The Colon as a Focus of Infection. ELLIOTT M. HENDRICKS, M. D. South. Med. J., June 1941.

Therapeutic Procedures in Chronic Rheumatoid Disease. MACNIDER WETHERBY, M. D. J. Lancet, Oct. 1941.

Periarthritis of the Shoulder: Comparison of Results Obtained by Physical Therapy and by Roentgen Therapy. WALTER M. SOLOMON, M. D., and JOSEPH L. MORTON, M. D. Arch. P. T., Oct. 1941.

Chronic Arthritis, Nonspecific Type, and the Nervous System. E. GOLDFAIN, M. D. Med. World., Sept. 1941.

Gout: A Prevalent Arthritic Disease. WALTER M. SOLOMON, M. D., and ROBERT M. STECHER, M. D. Arch. P. T., Aug. 1941.

Resume of the Present-Day Treatment of Arthritis. THOMAS K. LEWIS, M. D. J. Med. Soc. New Jersey, Aug. 1941.

A Review of Two Hundred and One Cases of Suppurative Arthritis. JOHN A. HEBERLING, M. D. J. Bone and J. Surg., Oct. 1941.

Back Conditions

Salvaging the Lame Back Patient. FRANK R. OBER, M. D. Arch. P. T., Oct. 1941.

Further Studies in Manipulative Treatment of Backache. FREDERICK A. JOSTES, M. D. Arch. P. T., Sept. 1941.

Bone and Joint Diseases and Injuries

A Splint to Increase Hip and Knee Motion. WILLIAM J. TOBIN, M. D. J. Bone and J. Surg., July 1941.

An Improved Shelf Operation at the Hip. EDWIN W. RYERSON, M. D. J. Bone and J. Surg., Oct. 1941.

Primary Pyogenic Infection of the Sacro-Iliac Articulation. A New Approach to the Joint: Report of Seven Cases. LEON AVILA, JR., M. D. J. Bone and J. Surg., Oct. 1941.

Bone Tuberculosis in Northern Newfoundland. CHARLES S. CURTIS, M. D., and EVARTS G. LOOMIS, M. D. J. Bone and J. Surg., Oct. 1941.

Deformities

The Prevention of Deformities. WILLIAM B. SHEPPARD, M. D. Crippled Child, Oct. 1941.

The Prevention of Crippling from Tuberculosis. JOSEPH S. BARR. Crippled Child, Oct. 1941.

Dermatology

Herpes Simplex Following Artificial Fever Therapy. FRANCES M. KEDDIE, M. D., R. B. REES, JR., M. D., and NORMAN N. EPSTEIN, M. D. J.A.M.A., Oct. 18, 1941.

Impetigo Contagiosa: The Streptococcic and Staphylococcic Varieties and Their Management. STEPHEN EPSTEIN, M. D. Wis. Med. J., May 1941.

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Diathermy in the Treatment of Irritable Colon: Preliminary Report. WALTER J. ZEITER, M. D., and R. F. RENSHAW, M. D. Arch. P. T., Aug. 1941.

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Aseptic Necrosis of the Femoral Head Following Traumatic Dislocation of the Hip: A Report of Nine Cases. SAM W. BANKS, M. D. J. Bone and J. Surg., Oct. 1941.

Acromioclavicular Dislocation. A New Operative Treatment. E. B. MUMFORD, M. D. J. Bone and J. Surg., Oct. 1941.

The Shelf Operation for Congenital Dislocation of the Hip. A New Technique for the Old Irreducible Dislocation. LEO S. LUCAS, M. D. J. Bone and J. Surg., Oct. 1941.

Retrolunar Dislocation of the Capitate with Fracture or Subluxation of the Navicular Bone. EDWIN F. CAVE, M. D. J. Bone and J. Surg., Oct. 1941.

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Physical Therapy in Education and Research. WILLIAM T. SANGER, Ph. D. Arch. P. T., Oct. 1941.

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The Larynx in the Tuberculous Patient. ROBERT M. LUKENS, M. D. Arch Otolaryn., July 1941.

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Electrical Accidents: Shock, Burns and Glare Injuries to Eyes. HART ELLIS FISHER, M. D. Arch. P. T., Oct. 1941.

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Prevention of Ankyloses Following Fractures of the Forearm. WILLIAM MARTIN, M. D. Med. World, Oct. 1941.

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Fractures of the Fingers. ERNEST D. LAMB, M. D. J. Lancet, Sept. 1941.

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First-Aid Care for Fractures. L. M. THOMPSON, M. D. Pub. Health Nurs., Sept. 1941.

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Hypothermia for Cancer. A. J. JONES. Amer. J. Surg., July 12, 1941.

Methods of Applying Heat Locally in General Practice. FRANK H. KRUSEN, M. D. Arch. P. T., Sept. 1941.

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Herpes Simplex Following Artificial Fever Therapy. FRANCES M. KEDDIE, M. D., R. B. REES, JR., M. D., and NORMAN N. EPSTEIN, M. D. J.A.M.A., Oct. 18, 1941.

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Physical Therapy in Relation to Surgery. HERBERT E. HIPPS, M. D. and BILLIE LOUISE CROOK, R.P.T.T. Arch. P. T., Sept. 1941.

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The Future of the Physiotherapist. E. J. CRISP, B. A., M. B. Brit. J. Phys. Med., Aug. 1941.

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Phlebitis and Its Treatment. LUDWIG EHRMANN, M. D. Hahnemannian Monthly, Sept. 1941.

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Cancer of the Lower Lip: Treatment with Radiation. JOHN H. LAMB, M. D. and WILLIAM E. EATLAND, M. D. J.A.M.A., Aug. 23, 1941.

Irradiated Antiviral Vaccines. Editorials, J. A. M. A., June 21, 1941.

The Effect of Infra-Red Irradiation on Cutaneous Temperatures. EARL C. ELKINS, M. D. and CHARLES SHEARD, Ph. D. Arch. P. T., Aug. 1941.

ABSTRACTS

John S. Coulter, M.D.

Artificial Respiration and Resuscitation

R. Eisenmenger, Deutsche medizinische Wochenschrift, Leipzig, Abst., J.A.M.A., 117:5:402, Au-

According to Eisenmenger, experiments in artificial respiration and resuscitation conducted on recently dead bodies of animals and man demonstrated that the abdomen constitutes the only peripheral site at which respiration as well as circulation can be favorably influenced at the same time and that best results are obtained by apparatus mechanically controlling alternation of air pressure and air suction. The modern theory, revised from one held twenty years ago, is that what counts is not the amount of oxygen, expressed in cubic centimeters, passed through the lung but the simultaneous action on the heart and circulatory system by which the actual passage of the air to the capillaries of the lungs, heart and brain is assured in the shortest possible time and carbon dioxide elimination. In serious cases of asphyxia in which respiration and circulation are involved, the latter constitutes the problem to be attacked first. It is with this end in view that intracardiac injections of epinephrine are made into the myocardium or right cardiac cavity to stimulate the heart and restore circulation. Direct cardiac massage in operative cases in which the heart is exteriorized and manipulated by the hand of the surgeon similarly is intended to incite the action of the heart. Both procedures need to be accomplished by artificial respiration. Biomotors are of two kinds, of over pressure and under pressure (uberdruck and unterdruck). In the former an increased intrapulmonary pressure supervenes in the respiratory tract which affects the lesser circulation. In the latter, normal pressure relations prevail. By means of artificial pressure and suction apparatus in animal experimentation, epinephrine, cafleine and other drugs, intravenously injected, could be made to reach the heart and the cen-

tral circulation even after the heart had already ceased its activity. Chemical agents can affect the nerve centers and thus influence blood circulation and distribution only if circulatory function still exists. If cardiac and circulatory action has already slowed down or ceased, mechanical intervention is in order. The author was able to observe the admirable results of mechanical resuscitation in cases of suffocation. Here cyanosis disappeared in from two to three minutes, consciousness was restored, acute liver enlargement receded and the patient could be promptly given nourishment. Artificial respiration by mechanical means also may be applied in serious cases in which sudden death appears to impend but no grave organic trauma is manifest and cardiac paralysis and acute circulatory insufficiency have not yet set in.

Malpractice: Alleged Negligent Application of Heat in Treatment of Phlebitis

Bureau of Legal Medicine and Legislation. Abst., J.A.M.A., 117:1:64, July 5, 1941.

Soon after being confined to bed for about fifteen days following an appendectomy, the plaintiff suffered severe pain in the lower part of his left leg. The defendant physician, who was then called in on the case, made a diagnosis of phlebitis and advised the application of heat to the affected area. In accordance with his instructions a cradle made from barrel staves sawed in half to which two 40 and one 50 watt electric light bulbs were attached was placed over the injured leg and covered with a blanket to retain the heat of the lighted bulbs, which were 6 or 7 inches distant from the leg. An ice pack was placed on the groin, the foot was elevated and the patient was kept quiet. From time to time hypodermic injections were given to relieve pain. Before the cradle was constructed, the physician left the patient and did not see him again until the following day. Meanwhile, the heat was continuously applied. On the physician's return, he discovered a water blister of considerable size which had formed on the leg between the ankle and the thigh. Because of his discomfort, the patient asked that the cradle be removed. The physician refused to permit this, informing the patient that the cradle was necessary for proper treatment of the condition and that the water could not be drained from the blister. As the physician directed, the lights as originally installed remained burning in the cradle continuously for about three days, when three bulbs of 15 watts each were substituted. The cradle was then used for an additional eighteen days and removed. After the removal of the cradle the blister burst, and subsequently ulcers formed in the affected area of the leg. Later the patient sued the physician for malpractice, claiming that he had been negligent in "the manner of applying the treatment."

At the trial it appeared from the testimony of medical experts that phlebitis is a condition not infrequently resulting from operations and that in spite of the care taken by the operating physician it is unpredictable and unpreventable. As the court viewed the evidence, phlebitis occurs when a blood vessel has become obstructed or "occluded by virtue of a clot known as a thrombus," and the condition is indicated by swelling in affected areas, pain and ofttimes discoloration. Phlebitis sometimes causes blisters on the surface of the skin without the application of heat, sores and ulcers developing quite commonly. In the opinion of the medical witnesses, the disability of the patient at the time of the trial was traceable mainly to the thrombus, the scarification that was present was a "cosmetic factor more than anything else" and, although not usually the case, phlebitis would cause not only blisters but destruction of the tissue "to the point of gangrene" without any application of heat. According to those witnesses, applications are frequently given by a homemade contrivance, without thermometer or means of adjustment, such as the one used by the physician in this case. In response to a question asked one of the expert witnesses called by the patient as to whether or not in his treatment of such a condition following an abdominal operation he had ever advised an electric cradle and left the installation of it to the patient, or to laymen, he stated that he had done so frequently and that it was customary to advise the use of a device such as was employed by the physician in this case and to leave it to a layman to follow the instructions given. At the close of the evidence, the trial court directed a verdict in favor of the physician and the patient appealed to the Supreme Court of Florida, division A.

The Supreme Court was unable to find any evidence in the record that would have justified a verdict for the patient. The fact, said the Supreme Court, that a blister did result while treatment was being given and that ulcers later appeared on the diseased leg did not of themselves establish negligence on the part of the physician, since the doctrine of res ipsa loquitur has no application under the facts here present. The evidence introduced by the patient falls far short of proving any negligence on the part of the physician. While it is evident that the patient suffered intensely as a result of the remedy used in treating his illness, the fact remains that his leg which was so badly affected was saved. There was no testimony that his physical condition after his ordeal was traceable to aught but the severe phlebitis which followed the operation. Even by the testimony of witnesses called by the patient, it was established, in our opinion, that in this case the proper remedy was used properly. Since we believe that the patient failed in his attempt to fix on the defendant physician the responsibility for the injury he endured, we find no error in the action of the trial court in instructing a verdict for the physician. The judgment in favor of the physician was accordingly affirmed.

Sensitivity of the Skin to Fluorescent Light

Arthur P. R. James, M. D., Toledo, Ohio. In Arch. Derm. and Syphil., 44:2:256, August 1941.

A new type of illumination produced by daylight fluorescent mazda lamps is coming into wide use, particularly in industry. In the development of a new source of light for general purposes, engineers are always concerned with confining the radiant energy emitted by the lamp within the wavelength range of natural sunlight. The glass tubing of the fluorescent lamp has a composition which absorbs all the energy of the shorter wavelengths than the short wave limit of sunlight. Nevertheless, dermatologists must be alert to the possibility of sensitivity to this type of lighting. I am reporting two cases to illustrate this fact.

Since this type of lighting is so desirable from a general standpoint, it is rapidly becoming popular, and undoubtedly many cases of sensitivity will be encountered. The fact that the wavelengths of the radiant energy of this type of lighting are confined to the range of natural sunlight would influence the belief that a person who would tolerate sunlight would tolerate this light. Case 1 disproves this belief. A person may show sensitivity to an isolated band of light yet tolerate it when it is mixed with light of other wavelengths.

With this fact in mind a new tube has been produced, termed "soft white," which will give off added red rays. It is hoped that the addition of the red rays will neutralize the effect of the rays producing dermatitis. Progress in this regard will be reported in a later paper. In the meantime temporary protection may be afforded the sensitized person by the use of a tannic acid solution and the wearing of polaroid glasses at the time of exposure.

Common Skin Diseases of Childhood

Louis A. Brunsting, M. D., Rochester, Minn. In Texas State J. Med. 37:1:33, May 1941.

Impetigo contagiosa.—First of all, the lesions are cleansed with soap and water after the dried crusts have been softened with olive oil. When the face is involved extensively, a moist compress in the form of a gauze mask soaked in a 1:4,000 solution of mercuric chloride is applied for half hour periods several times daily. Among the various topical antiseptic agents, ammoniated mercury ointment is perhaps most effective.

Ultraviolet irradiation of the affected sites is beneficial, especially in the case of infants and children, and the use of a borated dusting powder absorbs surface moisture and is slightly antiseptic as well.

Acne vulgaris.—Simple rules of treatment are the most effective in the control of acne and these can be summarized as follows:

1. Infected teeth and tonsils should be removed and the diet regulated by elimination of excesses of rich and starchy foods, condiments, stimulating drinks and chocolate. Brewers' yeast taken by mouth is a helpful adjunct.

2. The patient should be instructed to clean the skin several times daily with soap and water. After the washing at bedtime, the affected sites should be dabbed with an astringent agent such as lotio alba or Vleminckx's solution.

3. The patient should use cosmetics, especially creams, sparingly.

4. Actinotherapy is helpful in the form of either the sun or artificial ultraviolet irradiation. Regular exercise and plenty of sleep are needed. Nervous factors and menses often aggravate acne.

5. The physical procedure which is of most value is roentgen-ray irradiation.

The Early Use of Physical Therapy in the Treatment of Injury: Its Role in Minimizing the Need for Late Rehabilitation Measures

Clay Ray Murray, M.D., F.A.C.S., New York City. In N. Y. State J. Med., 41:10:1052, May 15, 1941.

There is not enough definite information available as to the total physiologic effects of the various so-called modalities of physical therapy. There is still too much vague and indefinite quasi information cited in support of hoped-for physiological effects. There are still those who are sure that the production of increased circulatory efficiency therein, whereas intense engorgement with decrease in circulatory efficiency as measured by rate of flow through the part is frequently the explanation.

From my own experience and that of others over a good many years, I have been convinced that elevation, gentle stroking, sedative massage, low-degree heat for prolonged periods, guided and resisted active exercise when it can be accomplished without pain, and muscle activity by electrical stimulation providing rhythmic slow, alternating muscle contractions and relaxations without either spasm or pain will produce the effects cited above. Likewise, heavy massage causing discomfort, intense heat for short periods, active exercise resulting in pain or spasm, and electrical stimulation giving muscle spasm or pain result in aggravation of the conditions for the relief of which they are given. Regarding diathermy, for the moment merely as a method of applying heat, high milliamperages for short periods of time belong in the latter group and low milliamperages for prolonged periods of time belong in the beneficial group. Therapeutic lamps giving intense heat for short periods of time do not help, while the low heat of two or three ordinary light bulbs inside a blanket tent over a period of hours is a definite benefit.

It is particularly in fracture cases that this early use of physical therapy is deprecated, yet it is in these cases that it is particularly valuable. True enough, its early use in these cases necessitates the employment of methods for treating the fracture which will allow ready access to the part for the use of physical therapy, and these methods are sometimes more difficult to carry out than other simpler methods that bar ready access to the affected regions.

Physical Therapy in Relation to Dermatology: A Resume

Anthony C. Cipollaro, M. D. In Arch. P. T., 22:9:525, Sept. 1941.

There are many diseases of the skin that improve or are cured by ultraviolet irradiation used either alone or as an adjuvant to other methods of treatment. It must be emphasized that treatment with ultraviolet rays is not the panacea for dermatological conditions it was first thought to be. There are definite indications and contraindications which must be thoroughly understood before extensive and intensive irradiation is instituted. The question of the superiority of one source of radiation over any other frequently comes up. Eliminating the theoretic considerations and eliminating the occasional special conditions that might arise, it might be said that for all practical purposes the dermatoses that respond to treatment by ultraviolet rays from one generator respond equally well to ultraviolet irradiation from other sources.

Acne Vulgaris.—Practically all forms of acne vulgaris respond to ultraviolet radiation. Some cases require flushing doses and others do better with more intense radiation. Judgment is required in selecting the particular technic for the particular stage of the disease. Severe acne can be kept under control indefinitely with ultraviolet rays and in many cases can be permanently cured.

Alopecia.—It can be safely stated that ultraviolet rays are a useful adjuvant in the treatment of alopecia areata and of alopecia prematura in some cases. The doses, however, should be sufficiently large to produce hyperemia or a moderate reaction. It must be understood that in no sense is ultraviolet radiation a "hair grower."

Dermatitis Herpetiformis.—In many cases dermatitis herpetiformis may be ameliorated and the severe itching improved by generalized ultraviolet irradiation. The doses, however, must not be excessive.

Dermatophytosis.—This common condition does seem to improve under the influence of ultraviolet rays. However, in cases of acute involvement further trauma should not be caused by intensive ultraviolet irradiation.

Eczema Seborrhoicum.—Occasionally this condition improves when treated with ultraviolet rays, especially if the lesions are chronic and of long standing.

Erysipelas.—Good results have been obtained in the treatment of this disorder with large doses (often erythema doses) of ultraviolet rays to the affected areas. However, it must be borne in mind that the sulfanilamide and its derivatives cause photosensitization and that the two agents should not be used simultaneously. The technic should be scrupulously supervised.

Furunculosis.—Multiple recurrent furunculosis of long standing is benefited by generalized ultraviolet radiation.

Neurodermatitis.—Patients with either the localized or the disseminated type of neurodermatitis improve when exposed to ultraviolet radiation.

Pityriasis Rosea.—The course of this disease can be considerably shortened by the use of ultraviolet radiation.

Parapsoriasis.—Parapsoriasis is a rare disease and is difficult for the average practitioner to diagnose. It is incurable, but occasionally lesions may be made to disappear by use of intensive doses of ultraviolet rays. The rule is that the lesions recur.

Psoriasis.—Carefully applied ultraviolet radiation in suberythema doses is valuable in the treatment of this disease. The treatments should be administered cautiously. If the affected areas are first anointed with a 3 per cent ointment of coal tar the effect of ultraviolet irradiation is accentuated.

Sycosis Vulgaris.—Localized as well as generalized ultraviolet irradiation combined with application of topical remedies often improves this condition.

Telangiectasis.—Telangiectases which occur without discernible cause and those associated with radiodermatitis and rosacea may be made to disappear by intensive treatment with a water-cooled lamp with compression.

Tuberculodermas.—Most of the dermatologic manifestations of tuberculosis are ameliorated in varying degrees by exposure to ultraviolet rays.

A. Erythema Induratum of Bazin: Generalized as well as localized ultraviolet irradiation combined with rest in bed, use of a diet high in vitamins and low in salt and injections of tuberculin yield satisfactory results within a few weeks.

B. Lupus Vulgaris: This disease is often improved when treated with intensive doses of ultraviolet radiation.

C. Scrofuloderma: The bset results in the treatment of this condition are obtained when localized and generalized ultraviolet irradiation are used in combination with systemic treatment.

D. Tuberculosis Cutis Orificialis: This form of cutaneous tuberculosis often yields to treatment with ultraviolet radiation.

Ulcers.—All forms of ultraviolet radiation are helpful in cases of indolent ulcers and wounds. It should be combined with other therapeutic agents.

Therapeutic Relaxation

H. J. Behrend and Jerome Weiss. In New York State J. Med., 41:1838, Sept. 15, 1941.

Tone is an essential feature of all living tissue. In health a normal tone is recognized. Deviation from the normal can occur in either direction. Decrease in tone results in the state variously described as atony and hypotonia. Increase in tone constitutes a hypertensive state. It is with the latter condition that we are chiefly concerned in this presentation. We must not confuse hypotonia with fatigue, as is very well described by Rathbone.

Deviations from the normal may be considered as primary and secondary. Primary deviations may be due to racial or individual characteristics. Some races are notoriously "high-strung"; others are definitely

phlegmatic. However, individual variation is observed in which an individual may differ widely in muscle and nerve tone as compared to others of the same general racial group. Among secondary factors we must consider environment and training as the most important.

Rest is a valuable means of promoting true relaxation. Unfortunately many people have a strange conception of what constitutes rest. We are familiar with the spectacle of the vacationer returning weary and far from being fit to resume his work. The objective of many physical therapy measures is to secure relaxation. In hydrotherapy we utilize the warm bath and the continuous warm baths as frequently used in mental institutions. Partial and full body packs also are used as well as the arm bath of increasing temperature.

Light therapy, especially radiant heat, also is of value to induce relaxation. Conversive heating by means of short-wave of conventional diathermy here has broad application.

Mechanotherapy in the form of massage, particularly in the form of superficial stroking, is markedly effective to produce relaxation.

Acoustic stimuli play an important role in relaxation. Some noises we definitely recognize as soothing, such as the murmur of a brook and the calming influence of soft music.

Jacobson, of Chicago, has published an interesting method of producing relaxation of neuromuscular hypertension. He teaches his patient to become acquainted with the concept of tension by letting him contract certain isolated muscle groups. By consciously releasing this tension, the patient is taught the sensation of relaxation. The authors have sought a method to produce relaxation without the conscious cooperation of the patient.

It may readily be demonstrated that shallow or incorrect breathing will produce tension. Shallow breathing combined with impaired circulation reduces oxygenation of the blood. The tissues of the body suffer in consequence, and further tension develops.

Experience has shown that we can produce relaxation by improving the respiration.

Breathing exercise, as compared with Jacobson's technic, may be freed from the activity of thinking. The diaphragm should set the rhythm for respiration, and the other muscle groups should follow its lead.

Following extensive study of the subject, the authors have established a technic for breathing exercises. The patient in his exercise suit is placed on a cushioned table in a comfortable dorsal recumbent position. He first exhales, blowing through the pursed lips. This must be done without effort. Pursing of the lips is important as it has a remarkable effect upon the action of the abdominal muscles. The patient must now rest quietly and wait until natural inspiration occurs. This is an essential feature, and sometimes a difficult one for the patient to master.

When properly performed, the inspiratory wave starts at the umbilicus and spreads to the pubis.

The Use of Surface Anesthesia in the Treatment of Painful Motion

Hans Kraus, M. D., New York. In J.A.M.A., 116:23:2582, June 7, 1941.

This paper describes a method of treatment for impaired function when pain is the factor responsible for the loss of motion or power. The treatment is the application of a surface anesthetic (ethyl chloride spray) combined with active motion.

As compared with the injection of procaine hydrochloride into the muscles and ligaments (Leriche), this method shows the following advantages:

1. Application is simpler.
2. Repeated application is possible, with less difficulty and risk.
3. Large areas can be controlled which otherwise would call for the use of vast quantities of procaine hydrochloride.
4. It does not work when fractures or tears are present; thus it is less dangerous and more selective.
5. It is more advantageous in its use as a diagnostic means, being more selective.
6. There is less risk of a local after-effect and no general after-effect such as is sometimes seen after the administration of procaine hydrochloride.
7. There is no danger of infection.

Discussion on Injuries to Peripheral Nerves

Rowley Bristow. In Proc. Royal Soc. Med., XXXIV: 8:513, June 1941.

Pre- and postoperative treatment is on similar lines, and to be considered under two headings: (a) Postural. (b) Nutritional.

I shall only consider one or two points under these headings.

(a) *Relaxation of paralyzed muscle.*—In the adult, even in the zero position the metacarpophalangeal joints and the interphalangeal joints will get very stiff if kept fixed. For these joints I would advise a compromise, which is best effected by the use of the short cock-up and the musculospiral glove—this latter consists of elastic accumulators replacing the paralyzed extensor tendons of the thumb and fingers.

(b) *We endeavor to maintain and improve nutrition,* by heat, massage, electrical stimulation, exercises and reeducation. By electrical stimulation is meant interrupted galvanism to the paralyzed muscle, which exhibits the so-called reaction of degeneration. I hold no strong views as to the value of electrical treatment physically, although psychically it is of great value. For a patient to see a muscle which he cannot activate voluntarily, both contract and relax, and a joint which to him is dead and useless, moved by his own muscle, must be an encouragement. Those who feel this form of treatment to be ill-advised will point out that denervation of muscle is followed after a few days by the onset of spontaneous, rhythmical contractions, fibrillation, which usher in rapid and progressive atrophy, and that to add still further to the work this degenerating muscle is forced to do is harmful.

Some Common Causes of Painful Feet

Philip Wiles, M.S. In Practitioner, CXLVI:6:389, June 1941.

Chronic Foot Strain

Relaxation of the muscles occurs when they are fatigued from such causes as prolonged and unaccustomed standing, a long illness or a rapid increase in body-weight. The change from civilian to military life, and to heavy service boots, is a prolific cause of trouble at present. Whatever the reason for the muscular relaxation, the effect is to allow the foot to rotate into the valgus position under the influence of the body-weight. Provided there is normal mobility this lowers the inner border of the foot and the weight comes directly on to the midtarsal bones. Mobility is the key to the problem of this type of painful foot. The supple foot, whether its habitual posture is arched or valgus, seldom causes any trouble. The foot that is stiff, whatever its shape, is liable to become painful when subjected to an unusual strain. The stiffer the foot, the smaller the margin of safety and the greater the risk of pain.

Treatment.—The pain is due to tension on an injured ligament and it can therefore be relieved either by preventing the tension or by curing the injury. The first is achieved by wearing arch-supports which further restrict movement and prevent the weight from coming on to the ligaments. This is only palliative and is chiefly of use in those cases in which there is no prospect of restoring a useful range of movements. It is not permitted in soldiers because of the difficulty in replacing supports under conditions of active service. The method of choice is manipulation, but it must be used with discretion. The object is to restore the range of painless movements by the rupture of adhesions and any new and painful scar tissue that may have formed in the ligaments. Manipulation is not used, as is often erroneously stated, to tear the ligaments themselves in badly contracted feet. Only sufficient force is used to rupture new scar tissue and this should be entirely inadequate to injure the structure of the ligaments. Manipulation must be followed by skilled massage and active and passive movements until the injury has resolved. When necessary, reeducation in muscular control must be given to correct any postural deformity, or other error in function, in order to prevent recurrence of the strain.

Anterior Metatarsalgia

Pain in the ball of the foot is nearly always due to trouble with the metatarsophalangeal joints of one or more of the outer four toes.

Treatment.—The successful treatment of anterior metatarsalgia depends on finding the underlying cause. The bruised joints will recover with complete rest and massage, but the trouble recurs rapidly if the cause is not removed. It may be that there is a faulty posture and gait which throw too much weight on the outer part of the foot—in normal walking the maximum strain, that is during the "take-off," comes on to the big toe. A deformity such as hallux valgus, hallux rigidus or hammer-toe, may have the same effect. Examination of the sole of the shoe shows at once where the weight is being carried. In most cases, in addition to some other defect, the intrinsic muscles are weak, or out of action; the ball of the foot is then splayed, or may be concave, and the groove between the first and second metatarsals is absent. The first step in treatment is therefore to correct by operation any gross deformity and then to reeducate the intrinsic muscles to restore the shape and function of the foot. In some cases there is no gross deformity and the intrinsic dysfunction appears to be primary. The approach is then to provide what rest is possible—this usually means a pad and strapping, since rest in bed is seldom practicable—whilst muscular reeducation is proceeding.

The Role of Physical Therapy in the Early Treatment of the Injured Workman

Madge C. L. McGuinness, M.D., New York City. In N. Y. State J. Med., 41:10:1049, May 1941.

Physical therapy and rehabilitation should be almost synonymous. The industrial surgeon, as a rule quickly sees the advantage to be gained by employing this adjuvant as early as is compatible and is thus spared many failures, mental and moral as well as physical.

When the surgeon is making a grand job of putting the broken body together, he is using, pari passu, physical therapy to keep the organism fit, so that when the time comes to get the patient on his feet his muscles will have their tonus, his legs will carry him, his feet will be his own, and the bed won't feel so welcome after fifteen minutes' absence from it. This is particularly true in fractures and dislocations where the gentlest heat, skilled gentle massage, active motion of parts distal to the site of injury, and postural, respiratory and general active exercises are begun directly following reduction and immobilization. Teaching the patient proper posture, to breathe properly, to exercise his uninjured members, to move about within his circumscribed area, to move his fingers, to make a fist, to shrug his shoulders, and to contract the muscles within the cast or extension apparatus in injuries of the upper extremity will go far to prevent the adhesions, immobility, stiffness, pain, and marked disability that frequently ensue when the appliances are off, when the bones have knit, when the dislocation stays reduced, and when the wounds have healed.

This is especially true of hand and wrist injuries where the patient easily falls into the habit of doing nothing for himself intensively and continuously. While gentle heat and massage are excellent aids, it is the active exercise of body, mind, and injured member which is going to set this patient's feet on the road to a job. Passive motion usually has no place in fractures.

Restoration of Function After Fractures of the Humerus

John Paul North, M.D., Philadelphia. In Penna. Med. J., 44:10:1277, July 1941.

If the patient with a broken arm were given his choice between a perfectly restored contour of the humerus as shown by a roentgen-ray film and a useful arm which is strong and freely movable, there is little doubt which he would choose. The ideal, of course, would include both, but the two are not always compatible.

Accuracy of reduction is essential in those fractures of the humerus which enter the elbow joint, but is less important in other portions of the bone.

Splints or retentive dressings should serve the purpose of preventing displacements or refracture with the least possible interference with joint movements. They should be kept in place long enough to accomplish this aim, but no longer. The simpler the dressing, the more likely is it to achieve this end.

It is extraordinary that so little emphasis is placed upon early voluntary motion, since this is the best and simplest way to restore normal function. Indeed, if active use of the arm could be continuous throughout convalescence, there would be no problem of restoration of function. The sooner a program of exercise is begun, the better.

Motion at the shoulder is started by having the patient bend forward and set his arm to swinging to and fro like a pendulum with the support only of the wrist sling.

While these efforts are being expended upon abduction and external rotation, internal rotation can be encouraged by having the patient touch first the seam of his trousers, then place his hand in his side trouser pocket, and finally scratch his back. In the performance of these exercises, successive goals should be set up so that the patient will perceive his own progress. At each visit we measure and record in degrees (with the goniometer)) the exact range of motion in each direction. This provides a graphic record and checks one's casual impressions which are often quite faulty. At these visits, definite instructions are given concerning exercises to be done and the number of times each is to be performed daily.

The burden of responsibility is placed squarely upon the patient.

Psychotherapy is an important element in this program for restoration of function. The patient must be imbued with the will to get well and be convinced that his own active efforts will largely determine the outcome.

A discussion of methods of functional restoration would be incomplete without reference to the value of occupational therapy. Creative work is always more fun than any system of calisthenics, and in concentrating upon its joints and muscles are moved quite unconsciously and without fear of the consequences. A trained occupational therapist is an asset for she will keep the patient interested despite initial awkwardness and will assign work in accordance with his abilities. Much may be done, however, even without trained assistance, for there are a surprising number of homely crafts and tasks which aid shoulder and elbow motion.

Effect of Short Wave Diathermy on Intestinal Activity

Christopher J. McLoughlin, M.D., Frank C. Mann, M.D., and Frank H. Krusen, M.D., Mayo Clinic, Rochester, Minn. In Arch. P. T., 22:6:325, June 1941.

The problem undertaken has been an attempt to evaluate the action of short wave diathermy on intestinal activity. Exteriorized loops of intestine at various levels were prepared in a normal physiologic state.

Gross observations and kymographic records reveal that almost immediately after feeding there is an increase in the motility of the intestines. Fasting and dietary changes do not alter the rate of rhythmic contractions.

In the dog the most common types of movement found are the rhythmic segmenting and the pendular movements. These movements occur at intervals followed by periods of rest of variable duration. The time of one complete contraction of muscle varies with the temperature. At 42 C. the duration of contraction is 3.3 seconds, and if the temperature is dropped to 16 C., it takes forty seconds for a contraction. This process is reversible. Short wave diathermy, probably by producing a slight elevation of the intestinal temperature, causes a slight increase in the rate of contraction.

There is a definite gradient of rhythmicity in the intestine. On the application of short wave diathermy, a small amount of heat is produced, resulting in a slight increase in the rate of contraction per minute, although the gradient remains relatively the same.

Roentgenoscopic studies were not a satisfactory means of determining the effects of short wave diathermy on intestinal activity.

Gross observations of the exteriorized loop were not accurate enough to obtain a true evaluation of the effects of short wave diathermy on intestinal activity. Kymographic records showed that under the influence of short wave diathermy the intestinal tract of the dog did not undergo any changes other than those produced by heat, and that these changes were similar to effects produced by the direct application of heat to the intestinal walls. The amplitude or tonus of contractions did not seem to be increased to any appreciable extent, and their character was in no way changed. Short wave diathermy did not initiate contractions, did not increase the strength of contractions and did not diminish or stop the contractions of the intestine. The only effect demonstrable was a slight increase in the rate of rhythmic contractions such as is produced by the application of heat to the intestine itself.

Roentgenoscopic studies showed no visible changes in the character of the contractions while the animal was under the influence of short wave diathermy.

Coordination of Therapy in Arthritis

Ralph Pemberton, M.D., Philadelphia. In Penna. Med. J., 44:10:1306, July 1941.

Dr. Mitchell knew nothing of focal infection but his results were magnificent and carried his name around the world because he understood the importance of the basic principles of physiology. These basic principles are just as significant today as they ever were.

Rest

1. Rest in recumbency improves the circulatory dynamics; it is especially important in the capillary beds.
2. Rest dilates constricted peripheral vessels because of added warmth referable to the bed clothes.
3. Rest modifies undue gravitational "pull" on ptosed and other organs.
4. Rest facilitates the passage of fluids from tissues into vessels.
5. Rest lessens overaction of nervous system by reducing psychic and physical stimuli (from activities and pain).
6. Rest permits replacement of the deficits and removal of the excesses which constitute fatigue.
7. Rest reduces energy losses and caloric demands.
8. Rest "splints" traumatized joints and muscles and permits repair.

As remarked above, physical therapy may be of extraordinary value and in some cases may be quite essential to recovery. The bases of physical therapy are heat, massage, rest, and exercise. Properly used these measures may not only improve circulatory conditions locally, modify pain, and restore tone to atrophied muscles, but they may even contribute to an increase in the red cell count. Physical therapy, which should include also postural exercises, will conduce toward reduction and especially prevention of deformity. Unfortunately, many technicians practicing physical therapy are animated by an undue zeal, springing, not unnaturally, from personal knowledge of the benefits which physical therapy can achieve. Unless technicians are advised that the treatment of arthritics differs from that of most other conditions, in that it must be conducted gently or not at all, they may add insult to injury by further traumatizing the joint tissues. The crime of "freeing adhesions" and churning joints is commoner than supposed. It may be said by way of epigram that treatment of arthritic joints by means of physical therapy should be directed anywhere except to the joints.

Order of Prescription for the Sick Arthritic

1. Rest.
2. Sedation and/ or stimulation.
3. Optimal nutrition in the refined sense.
4. Proper gastro-intestinal function.
5. Time for establishment of a general equilibrium.
6. Examination for foci of infection.
7. Medication, such as iron, arsenic, nux vomica, etc.
8. Treatment of foci, conservatively.
9. Use of physical therapy, conservatively.
10. Orthopedic help.
11. Last, if at all, vaccines, gold, etc.
12. Psychic reeducation.

Peripheral Arterial Occlusion

Grant P. Pennoyer, M.D., Associate Attending Surggeon, Roosevelt Hospital, New York, N. Y. In Amer. J. Surg., LIII:1:102, July 1941.

This report is based upon experience gained in a special clinic which has been conducted for over six years at Roosevelt Hospital for the diagnosis, study and treatment of arterial disease of the extremities.

Very few of the author's patients, even with extensive gangrene, who are kept in heat cradles at constant temperature, require any sedative medication. If pain suddenly recurs, one usually finds that something has gone wrong with the thermostat. He considers the thermostatic control of the temperature of the bed cradle one of the greatest contributions to the therapy of these cases. Its very simplicity leads some physicians to ignore it. Hot water bags, heating pads and even baking machines are still employed on these cases. No form of heat should ever be employed except heat thermostatically controlled. In addition to causing pain, the danger of burning is very great. The cutaneous sensation in severe cases is very dull or completely absent, so that the patient has no warning of the damage. In addition, there is no circulation to conduct away the heat. A hot water bag which feels just comfortably warm on the skin of the face may cause a bad burn to the feet of these patients. The intact circulation tries to keep the skin cool in the presence of excess heat, just as it tried to keep it warm in the presence of cold. If the circulation is arrested, the full heat of the hot water bottle is gradually transmitted to the skin which is blistered by a temperature which feels perfectly safe to the most careful nurse. Diathermy, heat lamps, ultra-red and baking machines are particularly bad. In addition to burning, the excess heat may precipitate a gangrenous process by increasing the discrepancy between the blood demand and blood supply.

Another most important consideration in treating an advanced case of peripheral arterial occlusion is absolute, prolonged body rest. Active muscles require much more circulation than the basal metabolism of the tissues. This is easily demonstrated by quantitative metabolism studies. When the blood supply is so reduced that even the basic nutritional need of the tissues is endangered, all other demands on the circulation must be eliminated as completely as possible to allow the remaining circulation to be used solely for nutrition. To allow the patient up and about, even to go to the toilet, uses the available oxygen in the muscles before it reaches the feet.

For this reason a patient with an unhealed ulceration, a local infection or imminent gangrene must be kept constantly in bed. The author believes that even Buerger's exercises, when they have to be undertaken by the patient's own muscular energy, do more harm than good. When they can be done without any effort on the part of the patient, as in the case of the Sanders' oscillating bed, it is believed that they are physiologically sound and of value.

Electro-Diagnosis and Electrotherapy in Peripheral Nerve Lesions

P. Bauwens, M.R.C.S. In Proc. Royal Soc. Med. XXXIV:8:459, June 1941.

To epitomize: we have at our disposal five methods of exploring the extent of nerve damage.

(1) *The classical method* in which nerve trunks, motor points, and the muscle itself are stimulated in turn by faradic and galvanic currents. Simplicity of apparatus and of technic commend it. Unfortunately the faradic current cannot be measured. The galvanic current can be measured but the values are of little significance. Of greater value are the qualitative features of the responses obtained. It must be remembered that this response may be the resultant of two contractions when the muscle tested consists of mixed fibres—normal and denervated. The former will account for the brisk component at make, the latter for the sluggish contraction which gives the impression of slow relaxation. Naturally the ratio of the two types of fibres will determine the overall response. When pain makes it impossible to use currents of sufficiently high intensity to be conclusive, an anesthetic may be restored to.

(2) *Chronaximetry* is exact only when all nerve fibres undergo degeneration or regeneration at the same rate and where homogeneity exists. It fails to reveal the presence of normal fibres. This is particularly the case when rectangular wave impulses are used although it may do so when exponential condenser discharges are used.

(3) *The Cluzet method*, which was also adopted by Lewis Jones, is almost certain to detect normal fibres, since condensers are charged to a definite potential and strong impulses of short duration are always started with. But here the shape of the stimulating current curve is dependent on unpredictable factors such as skin resistance, edema, etc. Moreover there is, as pointed out before, the possibility of stimulating various fibres simultaneously with exponential stimuli.

(4) *Plotting an intensity duration curve*, employing rectangular waves. This technic would be most tedious and nearly as much information can be reaped from a curve plotted from three points representing three different durations—the base line being reduced to unity.

(5) *By means of modulated currents.*—To stimulate a nerve the onset of the current must have a steeper gradient than to stimulate muscle—particularly denervated muscle, and the ratio of the current required to stimulate a muscle with rectangular waves to that required to stimulate it with a progressive current bears a relation to the state of the muscle and nerve.

The investigation may be carried out with a bipolar or longitudinal application of electrodes.

Each method has its advantages in certain circumstances. The faradic current will reveal the presence of normal muscle fibre except where considerable edema is present, while the progressive currents will pick out denervated fibres. Chronaximetry, by detecting early return towards shortened chronaxies may point to concussion of the nerve as opposed to more severe damage. Galvanic stimulation of the nerve trunk may indicate recovery before voluntary control has returned.

With regard to the value of artificially produced muscle exercise in paralysis, on the assumption that function improves the organ, I believe in electrical stimulation of paralyzed muscles, for although it does not prevent atrophy, circulation and nutrition are improved. To be effective and noninjurious it is important to use a technic which will not produce contractions in normal muscles surrounding and opposing the paralyzed ones. Fatigue must be avoided by allowing long pauses of rest between contractions which should be few in number. If the blood supply is inadequate this treatment may have to be withheld.

Where interrupted galvanic currents produce contraction of antagonistic muscle groups, the progressive currents or modulated direct current should be used.

Intestinal Tuberculosis

W. R. Hewitt, M. D., Tucson, Ariz. In Dis. of the Chest, 7:4:115, April 1941.

The patient should be at bed rest.

The diet should be bland and of low residue to a degree depending on the comfort of the abdomen.

Constipation should be managed in the simplest way. Laxatives are to be avoided. Mineral oil should not be used steadily.

Artificial heliotherapy is essential in the treatment of tuberculosis of the intestine. It is preferable to sunlight because dosage is more accurately measured and because it supplies more of the beneficial rays and because it does not harm the lung disease as sunshine often does. The patient should be exposed to a mercury vapor ultraviolet lamp over the whole body, except for the chest and eyes which should be covered. In some instances, the chest is not covered, but it is probably safer to do so.

The lamp is focused over the abdomen. Exposure is begun with one-half minute to back and to front daily with the burner placed at a thirty-six inch distance. The time is increased by one-half minute daily, or according to the individual tolerance. Burning is to be carefully avoided. When the exposure reaches thirty minutes to back and to front the lamp may be gradually lowered to thirty inches. Irradiation is continued this way over one to two years, depending on the progress.

First Aid Teaching Technic

C. J. Potthoff, M.D. In J. A. M. A., 117:17:1417, Oct. 25, 1941.

Criticism has repeatedly been directed against various aspects of teaching on the topic of artificial respiration. Clearly, the following points should be emphasized:

1. Get started at once.
2. Compress the chest and release twelve to fifteen times a minute.
3. Treat shock.
4. Keep the victim quiet after he starts breathing.

The student should know of the precious time interval between cessation of breathing and cessation of heart action. He should therefore know of the great need for starting artificial respiration at once. Though the prone pressure method is used ordinarily, it is occasionally impossible to straddle the victim. The student should understand the idea so that he will start artificial respiration in a boat or wherever he finds the victim.

The student should know when the method is useful. Occasionally instructors state that the procedure should be followed any time a victim is not breathing. Hence first aiders are giving artificial respiration to victims of stroke, of concussion and even of infectious disease. The argument favoring such teaching is as follows: If a victim is not breathing, artificial respiration cannot be harmful, though it may be useless. One cannot expect the average person to remember a series of indications for its use; but if this person is taught to use the method any time a victim is not breathing, he will remember such a simple rule well.

The argument fails to consider the commonest mistake of the first aider. In his excitement he administers the prone pressure method to victims who are unconscious but breathing. Such cases often represent stroke, concussion or injury to the visceral system. The procedure of artificial respiration here may represent the finishing coup; it is definitely dangerous. During the past year the author has seen two cases in which prone pressure method was being used on victims of stroke. These injuries are very common, and if the first aider gives artificial respiration to every victim of stroke or concussion he sees he may be responsible for more dire results than the good which follows use of the method wisely. Hence students must learn when artificial respiration is to be used.

The technic of the prone pressure method requires practice for good administration. The beginning instructor should be coached in the technic by an experienced operator. Otherwise, while he may get a good exchange of air, he may fail as a teacher in being awkward or singularly atypical in method.

Acute Occlusions of the Peripheral Arteries: Clinical Analysis and Treatment

Gamliel Saland, M.D., New York, N. Y. In Annals of Int. Med., 14:11:2027, May 1941.

No more dramatic episode exists in medicine than the sudden onset of an arterial occlusion. In fact, the onset is so characteristic that the condition is seldom overlooked. Unfortunately, however, the proper therapy is often too long delayed.

The author presents an analysis of 31 cases of acute closure of the peripheral arteries to call attention to certain clinical features that require emphasis, and to show that extremities can be saved when proper conservative measures are instituted. He also attempts to show that the loss of life in individuals who are properly treated is not due to the acute arterial lesion per se, but rather to the basic disease that existed before the embolism or thrombosis occurred. If one can prevent the formation of gangrene, the chances of saving the affected limb and thereby prolonging life are proportionately greater.

In the conservatively treated cases of this series, the author used a combination of the foregoing measures, and adhered to the following routine. The patient was put to bed and was given one-half grain of papaverine intravenously as soon as possible. He was covered with wool blankets; warm water bottles were placed in the axillae when the lesion was in the lower extremities; and whiskey was given in one ounce doses, three times daily.

The patient was seen by a member of the peripheral vascular department as soon as possible, and the affected limb was placed in a suction pressure apparatus. The apparatus was adjusted so that during the negative phase, the skin of the limb would either become pink, or the superficial veins would fill; during the positive phase the skin of the extremity would pale, or the superficial veins would collapse. If the patient could stand it, he would receive six to twelve hours of continuous treatment. On the second day he would receive four to six hours, and then the treatment would gradually be reduced to two hours daily. They tried in most cases to give a minimum of 100 treatment hours.

The contraindications to the use of suction pressure therapy are: first, pain during therapy; second, infection; and third, edema. The treated cases presented neither infection nor edema, and in only one instance was pain during treatment a factor in the cessation of therapy. It was usually high negative pressure that caused pain and the negative pressure could often be diminished to the point where treatment could be tolerated.

A Hospital Study of Poliomyelitis with a Follow-up Survey One Year Later

Leo Litter, M.D., Brooklyn. In Arch. Pediatrics, LVIII, 7:413, July 1941.

At the Kingston Avenue Hospital the orthopedic treatment is instituted as soon as the acute illness has subsided and the temperature is normal. The proper therapy is the utilization of rest, orthopedic appliances, physical therapy, graded exercises and surgical procedures. The treatment should begin at the earliest sign of paralysis, demonstrated at first by any definite weakening in muscle strength, and not necessarily by a total or even extreme loss of power. The paralysis which occurs is of the flaccid type, the part affected being limp and lifeless.

When any signs of muscular weakness, paralysis or contractures exist, and when the acute illness has subsided, and further spinal punctures are unlikely, a plaster of Paris cast is applied to the involved part in the normal or in the overcorrected physiological position.

The second or convalescent stage extends from the subsidence of muscle tenderness to the slowing of the process of recovery of muscle power. The duration of this stage may be at least two years. The third

stage, the stage of residual paralysis, represents the best end result so far as muscle strength is concerned, the remainder of the patient's life.

In the treatment during the acute stage and also during the convalescent stage one must consider three definite points: (1) Maintenance of nutrition and circulation to the involved part. (2) Restoration of muscle power. (3) Prevention of deformities. In the early stage—during the period of immobilization, the following are accomplished: pain is relieved, the involved part is kept at rest, contractures and deformities are prevented and proper circulation of the part is maintained. Further, bivalving the cast favors the maintenance of nutrition by means of radiant light and heat, permits light massage, and prevents disturbances of circulation. Direct application of heat to the cold extremities, such as warm tub baths, facilitates movements of the various affected parts within the limits of pain. The daily warm bath tends to shorten the phase of muscle tenderness and aids in the prevention of contractures. Exercise should be started slowly and with great care. Any sign of fatigue, whether local or general, should be avoided.

Physical Therapy in Peripheral Vascular Disease

B. S. Troedsson, M.D., Orange, New Jersey. In J. Med. Soc. of New Jersey, 38:8:411, August 1941.

Conway, using the Herrman cycle, reported improvements in 80 per cent of patients with arteriosclerosis affecting the major and secondary arteries of the extremity. They were treated from 3 to 6 months. In 9 of 10 cases of sudden vascular occlusion the treatment was effective. In 4 cases of thrombo-angiitis obliterans no benefit was noted. Passive vascular exercises were employed without other treatment save the inunction of the skin, the care of the nails, and other simple measures. Without Pavaex treatments, Bernheim and London reported 84 per cent of cases of arteriosclerosis and 79 per cent of cases of thrombo-angiitis obliterans showed improvement. In addition to the medical management, physical therapy was used in the form of Buerger's exercises and warm soaks. Very light massage was also allowed.

Thus it appears that the actual value of the Pavaex treatment still has to be determined. Possible conditions in which the treatment would be indicated are arteriosclerosis with predominant involvement of the major and secondary arteries, acute arterial occlusion due to embolism, thrombosis, traumatism or operative ligation of major vessels and acute peripheral circulatory stasis as in frostbite.

De Takats, et al., have recommended a third method of treating peripheral vascular diseases. They adopted a triphasic cycle consisting of:

1. Elevation of the extremity for 1 minute.
2. Venous compression until rubor appears.
3. Horizontal position followed by release for a period twice the venous compression less 1 minute.

The Sanders' Bed essentially reproduces the action of Buerger's exercises in a more efficient manner and without any effort on the part of the patient.

Iontophoresis with acetyl-beta-methylcholine was introduced by Kovacs. The drug is applied to the positive pole of a galvanic current and follows the current into the tissues. The procedure has been advocated for use in chronic varicose and post-phlebitic ulcers.

Buerger's exercises are extensively used. They consist of elevating the legs and resting them on a 45 to 60 degree plane until blanching appears, then sitting up and hanging them over the edge of the bed until rubor appears or the veins are filled. This is followed by rest in the horizontal position for 30 to 60 seconds. This cycle is repeated for 20 minutes several times during the day. The tendency is to prescribe these exercises in a fixed manner as for instance, 1 minute up, 1 minute down, and 1 minute rest; or 3 minutes up, 3 minutes down and 3 minutes rest. This is wrong. The exercises should be individualized and the time determined by the blanching and rubor in some cases, and in others by the venous emptying and the venous filling time.

Gonorrheal Ophthalmia and Gonorrheal Ophthalmia Neonatorum: An Evaluation of the Treatment

Everett Barclay Muir, M.D., Salt Lake City, Utah. In Amer. J. Ophthal., 24:8:879, August 1941.

Gonorrheal eye disease continues to exact a toll of damaged and lost eyes in spite of more efficient prevention and improved treatment.

Irrigation of the conjunctival sac is considered to be indispensable by all clinicians. Iced compresses are most frequently used for lid swelling, while hot compresses are used occasionally for the same purpose.

In the Cincinnati cases intermittent iced compresses were found of benefit, while the use of continuous iced compresses increased the frequency of corneal ulcers.

Corneal ulcers occurred much less frequently in gonorrheal ophthalmia when the palpebral conjunctiva was painted with silver nitrate 0.5 to 2 per cent solution by a physician, than when the same solution was instilled.

Progress in the treatment of gonorrheal eye disease may be said to have made three considerable advances in the last decade. In the order of their introduction, credit for these advances must be given to: (1) Nonspecific or foreign-protein therapy. (2) Artificial-fever therapy. (3) Sulfanilamide therapy. The second is closely allied to the first in its rationale. The third achieves its results in an entirely different manner and is a form of chemotherapy. In none of them is the mode of action entirely understood, and their use is fundamentally empirical. All three have reduced the length of hospitalization; all have diminished the frequency and severity of corneal complications.

While sulfanilamide has produced more brilliant results than any previous therapeutic measure, it must be used with caution and a full understanding of its potential dangers. There will continue to be cases of gonorrheal conjunctivitis, resistant to sulfanilamide, in which recourse to all available therapeutic resources will be necessary to prevent loss of the eyes.

Physiological Scoliosis

Aladar Farkas, M. D., Iowa City, Iowa, Visiting Professor, Orthopedic Department, State University of Iowa; Formerly Chief Surgeon, Orthopedic Department, Brody Hospital, Budapest, Hungary. In J. Bone and J. Surg. 23:3:607, July 1941.

Prior to its recognition by anatomists and other investigators, the existence of physiological scoliosis had been constantly observed by tailors and dressmakers for many centuries, of course without their having recognized the condition. As the physiological scoliosis increased with advancing age, the tailor or dressmaker would become suddenly aware that the shoulders of the customer were no longer level and that one of the hips had become prominent. The whole stature of the individual had changed, and it would become necessary to camouflage the usual physiological deformation ascribed to age. The main reason for the change was nothing but physiological scoliosis, which, by shifting of the shoulder girdle from one side of the hip line to the other, had finally changed the stature.

The existence of physiological scoliosis was scientifically established over 150 years ago by Sabatier, who found that the great majority of adult spines showed a well-defined curve to the side; in the lumbar and cervicothoracic segments the convexity was usually to the left side, and in the thoracic region, to the right side.

Measurement of the twelve thoracic and five lumbar vertebrae of twenty-one normal spines and of one scoliotic spine, ranging in age from six to eighty-six, elicited the following conclusions:

1. The postnatal development of normal spines becomes asymmetric about the age of six, progressing with advancing age.

2. The asymmetry concerns the vertebral body and pedicles as well as the arches. The most striking feature of the asymmetries found was the dorsoventral elogation of the vertebral bodies: in the upper thoracic region, on the left; in the lower thoracic segment, on the right; and in the lumbar region, on the left. Besides this, the lengthening of the pedicles on the side of the elongation and broadening of the pedicles on the other side, and the deviation of the arches opposite the side of the dorsoventral elongation could be regularly observed.

3. Since the spine in all of the specimens except that of the normal six-year-old child showed marked lateral deviation, the asymmetric postnatal development of the spine represents physiological scoliosis.

4. In physiological scoliosis, contrary to the findings in pathological scoliosis, the wedging of the vertebrae plays but a subordinate role. The curves throughout are composed of lozenge-shaped (rhombic) vertebrae, representing the prescoliotic stage of the deformation without marked signs of motion in the articular processes. Further differences between physiological and true scoliosis are as follows: In physiological scoliosis the physiological sagittal curves never disappear, and, furthermore, in none of the specimens examined were all of the bone elements of the same vertebra concerned at the same time; in true scoliosis all of the parts of the vertebra are more or less deformed.

5. The osteophyte production always starts at the ventral edge of the dorsoventral elongation.

6. In physiological scoliosis, as well as in pathological scoliosis, the deformation of the spine takes place in the diagonal plane, never in the exact frontal plane.

7. The cause of physiological scoliosis is the human gait, which forces the spine into a threefold curve, alternately changing at every step. However, the innate normal asymmetries of the human body eventually establish permanent lateral curves of the spine, showing marked individual variations within the general law.

Management of Peripheral Vascular Disease

Geza de Takats, M. D., Chicago. In Illinois Med. J., October 1941.

The treatment of peripheral vascular disease rests on adequate diagnosis.

The objectives of treatment may be readily summarized under three headings: (1) To improve collateral circulation. (2) To alleviate pain. (3) To remove non-viable parts at the optimal time and level. These can be accomplished by physical therapy, by drugs, and by surgical procedure, as follows:

Physical	*Medical*	*Surgical*
Heat	Vaccines	Sympathectomy
Hot and cold bath	Hypertonic solutions	Paravertebral block
Postural exercises	Alcohol	Peripheral nerve block
Massage	Theobromine	Amputations
Diathermy	Papaverine	
Short wave	Nitrites	
Iontophoresis	Choline derivatives	
Suction and pressure	Iodides	
Venous hyperemia		

Heat in all forms is useful, but the cheapest, safest, and most effective is the continuous or intermittent use of a "baker." Most patients with arterial occlusions are comfortable between 85 and 90 F., but occasionally the optimal temperature is lower than that; as low as 75 F. If the patient is complaining of pain under the heat cradle, it signifies that he is getting too much heat. This is just as harmful as if his feet were too cold. Generally speaking, it is safest to wrap the affected limb in cotton and move the cradle up toward the root of the limb.

Alternate hot and cold baths frequently are used to "tone up the blood vessels." In the experience of our group their value is rather questionable in peripheral vascular disorders.

Postural exercises may be done actively by the patient or passively by an oscillating bed.

Massage may overcome vascular spasms and produce a reactive hyperemia. We have far more efficient methods to produce reactive hyperemia. In our clinic, perhaps for economic reasons, we have made little use of massage.

Diathermy treatments.—To heat up the lower extremity, electrodes are placed on the abdomen and the lower back. For the treatment of the upper extremity, the electrodes are placed on the side of neck and the upper dorsal spine. Thus not only is the blood being heated as it passes through the root of the limb but a reflex vasodilatation is produced, which is mediated through the sympathetics, as it is absent in sympathectomized patients.

Intermittent venous hyperemia.—In analyzing the mechanism by which alternating suction and pressure exert their effects on peripheral circulation, Hick, Coulter and the author were struck by the fact, that with each period of suction, there occurs constriction of the thigh at the cuff, which is released during the positive phase. The phenomena of reddening of the toes, filling of the veins, rise of surface temperature, and the increased mobility of the toes, all of which can be observed as objective changes produced by passive vascular exercises, can be duplicated by intermittent venous hyperemia. While any blood pressure apparatus can be used to produce intermittent venous stasis, a wide, eight-inch cuff, conically shaped to fit the thigh is preferable. The amount of pressure should not exceed the diastolic pressure of the extremity at that level. It usually varies between 90 and 60 millimeters of mercury. The duration of venous compression is determined by the appearance of definite redness; this occurs in from one to two minutes, when pressures of 60 to 90 millimeters are used. The duration of the release should be as long as that of the compression.

Rowing Method of Artificial Respiration

M. C. Rosekrans, M.D., Neillsville. In Wis. Med. J., 40:7:567, July 1941.

Rowing method: With the patient supine, place yourself at the patient's head. Grasp the patient's arms at the wrists and firmly extend his arms above his head, to raise the chest, keeping them there long enough for air to enter the chest; then rapidly drop the arms back toward the patient's chest, leaving them there long enough for air to rush out of the chest. Repeat this rowing motion ten to twelve times per minute.

The rowing method depends solely for its success upon the fact that the arms are extended over the head and the accessory muscles of respiration are brought into play; they are the pectoralis major and minor, and subclavious muscles. The arms act as levers of the second class, the weight being lifted that of the chest suspended through the above named muscles. There is no pressure brought to bear upon the body at any point. With the patient in a comatose state, being relaxed as he is, the chest is raised with very little effort. As I said before in the above case report, one operator was able to carry on this rowing motion for two hours or more with perfect ease. The operator may even take time out to change position and to pause for a few seconds from his work.

The rowing technic of artificial respiration has definite advantages over the prone pressure method as follows:

1. It requires only one operator to keep the operation going.
2. Since there is no pressure applied, and the extension of the arms is within normal limits, there is no chance for trauma.
3. It adapts itself to use under any condition where artificial respiration is necessary.
4. It also adapts itself to convenient observation and care of the patient.
5. The procedure is that of an entirely positive respiratory mechanism throughout, and admits a maximum amount of aeration.
6. Mechanically the rowing technic is satisfactory.
   a. The mechanism depends upon the expansion of the respiratory cage through the pull of the accessory muscles.
   b. The lungs are expanded in a positive phase.
   c. The weight of the anterior chest returning to rest causes the expiratory phase.
   d. Accessory muscle tone remains satisfactory so long as there is tone in other muscles.
   e. The respiratory rate is lower because of greater aeration.

Phantom Limb

Allan A. Bailey and Frederick P. Moersch, Rochester, Minnesota. In Canad. Med. Assoc. J., 45:1:37, July 1941.

"Phantom limb" is a term which is used to designate the sensation of feeling the presence of an extremity following its amputation. Phantom syndromes also may occur following the amputation of a breast or penis, or following the extraction of a tooth. Phantom limb is of more than casual interest, since the associated pain and dysthesia may incapacitate the patient and in some instances lead to drug addiction or suicide.

It has been said that when many types of treatment are recommended for a disease no one of them is entirely satisfactory. The literature contains numerous reports of the successful treatment of phantom limb and pain in the stump, but in most cases the duration of the cure has been recorded in months rather than in years.

Application of physical therapy to the stump relieved the symptoms for a short time in some cases but in others it did not produce any relief. In one instance it proved satisfactory when used every three or four months.

Each of 15 patients was subjected to one operation and each of 25 patients was subjected to two or more operations; 15 were not treated surgically. The treatment of this syndrome is still unsatisfactory.

Book Reviews

FOUNDATIONS of BIOLOGY: By Lorande Loss Woodruff, Professor of Protozoology, Director of the Osborn Zoological Laboratory, Yale University. Sixth edition. Cloth. Price, $3.75. Pp. 773, with 470 illustrations. New York: The Macmillan Company, 1941.

In the sixth edition of this book both the text and the illustrations have been thoroughly revised. The present volume brings together in brief form the fundamental principles of biology for the college student and general reader.

The author believes that the large problems of life are common to both zoology and botany and therefore both animals and plants have been drawn upon for illustration and discussion. The zoological aspect is emphasized since it affords indispensable data for the interpretation of man himself.

The subjects considered are: the scope of biology; cellular organization of life; the physical basis of life; metabolism of organisms; the multicellular organism; the plant body; reproduction in plants; survey of the plant kingdom; the animal body: invertebrate; survey of the animal kingdom: invertebrate; survey of the animal kingdom: vertebrate; the animal body; vertebrate; nutrition; circulation; respiration; excretion; reproduction; coordination, endocrinal; coordination, nervous; origin of life; continuity of life; fertilization; development; genetics; organic adaptation; orgin of species; the human background; biology and human welfare and biological history.

This volume is an excellent college text and can be recommended to the general reader as bringing together in brief form the fundamental principles of biology.

THE VOICE GOVERNOR: GIVE IT A CHANCE. CORRECT BODY MECHANICS DOES IT. By Ralph M. Harper. Cloth. Price, $2. Pp. 142, with 40 illustrations. Boston: E. C. Schirmer Music Co., 1940.

This is an interesting volume which opens up a new field of interest for the physical therapist. The author states that the subtitle of the book: "Give It a Chance. Correct Body Mechanics Does It" was contributed by Dr. Joel E. Goldthwait. The first part of the book is a study of the effect of good body mechanics and the proper use of the diaphragm on the voice. The author believes that the voice instructor should send his students to physical therapists for instruction in good body mechanics. He believes that by strengthening the lower abdominal muscles, and widening the lower rib region, the diaphragm has a chance of a greater range of motion and thus sustains the voice for the larger demands of speech and song.

Parts two and three demonstrate the proper use of the whole body for the production of a beautiful voice. This volume is of interest to speakers and voice teachers.

YOUR PERSONALITY—INTROVERT OR EXTRAVERT? By Virginia Case. Cloth. Price, $2.50. Pp. 277. New York: The Macmillan Company, 1941.

The idea of two main types of personalities represented by the "doers" and the "thinkers" was proposed by Jung. The former were designated "extraverts" and the latter—"introverts." In everyday life we see about us individuals who seem to be exuberant with energy. They are the hale and hearty persons who work with their hands, who play with gusto and who think with alacrity. They are the builders of bridges, the politicians and high pressured salesmen. In these individuals we are apt to see swings of mood which, if extreme, may even find expression in the manic-depressive psychoses.

In contrast to this type are those who are quiet, who work with their minds; the creators, the artists, the esthetics. They frequently are shy and shun the limelight. They are often thin in body and stay at home instead of mingling with their fellowmen. These individuals are prone to excessive introspection and are liable to be guilty of too much daydreaming. Such persons are susceptible to schizoid reactions.

A healthy combination of these two extremes makes for the most wholesome personality type, and by a better understanding of particular tendencies, individuals may better understand themselves and their fellowmen.

DIET IN SINUS INFECTIONS AND COLDS. By Egon V. Ullmann, M. D. Second edition. Cloth. Price, $2. Pp. 185. New York: The Macmillan Company, 1941.

This book contains much information that is of value to the general reader, but it also contains some peculiar notions. It is believed that physical therapists would question the author's statement that people who are easily exposed to colds should not bathe daily. Another example: "Potatoes consumed in abundance assist in dissolving uric acid. This latter-mentioned quality makes potatoes especially valuable for people who suffer from colds." No scientific evidence is mentioned to support such statements.

The author states: "One of the main claims that can be made, though, for vitamin A deficiency is the lowered resistance toward infection and colds." This is in direct contrast to the statement of the Council on Foods and Nutrition of the American Medical Association: "It (vitamin A) certainly has not been shown to be specific in the prevention of colds, influenza and such infections, nor has it been demonstrated that ingestion of vitamin A far in excess of that necessary for normal body function and readily obtained from a properly selected diet is an aid in preventing various types of infections." Therefore, in considering these and other uncritical views it is impossible to recommend this volume as a conservative presentation of the value of diet in sinus infections and colds.

HELP YOUR DOCTOR TO HELP YOU WHEN YOU HAVE SICK HEADACHE OR MIGRAINE. By Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 37. New York & London: Harper and Brothers, 1941.

This is one of a series of little books on common illnesses which have been prepared for the layman to take the place of the old-fashioned "home doctor" books. Sick headache or migraine occurs commonly enough, especially in women, and although its exact cause is still unknown and its complete cure still not established, nevertheless the sufferer from this malady will find the answers to many little questions which he would like to know about, such as matters of diet, restriction of activities and medication. The language is simple and the information is authoratative.

NEUROLOGY: LECTURES FOR MEDICAL STUDENTS AND GENERAL PRACTITIONERS. By Knud H. Krabbe, M. D., Chief-Physician, the Department of Neurology, Kommunehospitalet, Copenhagen. Translation by Gerda Seidelin, M.B. Paper. Price, 12 Danish kroner. Pp. 390, with 9 illustrations. Copenhagen: Einar Munksgaard; London: Oxford University Press, 1941.

This is a collection of lectures on neurology delivered to the medical students by a professor of neurology whose reputation is well established in neurologic circles. It is essentially a clinical presentation of syndromes of neurologic diseases presented in a most delightful as well as instructive manner. Although calling sufficient attention to the underlying anatomy and pathology of the more common diseases of the nervous system, the author stresses particularly the diagnostic and etiologic factors. In reading the text one seems to be present in the very clinic where Professor Krabbe is presenting patients suffering with neurologic disorders.

Disease of the peripheral nerves, spinal cord and brain are presented with a color and vitality not usually found in most textbooks of neurology. One might criticize the book, however, in that many of the topics are treated with brevity so that the reader may not find much information which he will find in other textbooks of neurology.

BASIC PROBLEMS OF BEHAVIOR. By Mandel Sherman, M.D., Ph. D. Cloth Price, $3. Pp. 440. New York, Toronto & London: Longmans, Green & Co., 1941.

In this book an attempt is made to apply the fundamental principles of behavior which are usually discussed by psychologists to the problems of everyday life as expressed by patients who consult the physician or psychiatrist. Instead of the usual didactic presentation of such topics as emotions, instincts, attitudes and personalities, as cold objective material, the present author gives to such items warmth and life by depicting them in their usual and unusual settings as observed in normal and neurotic individuals. The book is written in an interesting and delightful manner and will well repay the reader for his time spent with it.

INFANTILE PARALYSIS: A SYMPOSIUM DELIVERED AT VANDERBILT UNIVERSITY, APRIL 1941. *Cloth. Price, $1.25. Pp. 239, New York: The National Foundation for Infantile Paralysis, Inc.,* 1941.

The National Foundation for Infantile Paralysis presents this book with the sincere desire to further the work in combatting poliomyelitis. The six lectures, each presented by an authority in his field, are: "History of Poliomyelitis Up to the Present Time," by Paul F. Clark, Ph. D., Professor of Bacteriology, University of Wisconsin Medical School; "The Etiology of Poliomyelitis" by Charles Armstrong, M. D., Senior Surgeon, United States Public Health Service; "Immunological and Serological Phenomena in Poliomyelitis," by Thomas M. Rivers, M. D., Director, The Hospital of the Rockefeller Institute for Medical Research; "The Pathology and Pathogenesis of Poliomyelitis," by Ernest W. Goodpasture, M. D., Professor of Pathology, Vanderbilt University School of Medicine; "The Epidemiology of Poliomyelitis," by John R. Paul, M. D., Professor of Preventive Medicine, Yale University School of Medicine; and "Treatment and Rehabilitation of the Poliomyelitis Patient," by Frank R. Ober, M. D., John B. and Buckminster Brown Clinical Professor of Orthopedic Surgery, Harvard University Medical School.

These lectures give an excellent resume of the present knowledge of this disease. It is a book that should be read by every physician and health officer concerned with the intricate problems of poliomyelitis.

ANNUAL REVIEW OF PHYSIOLOGY. James Murray Luck, Editor. Victor E. Hall, Associate Editor. Volume III. Cloth. Price, $5. Pp. 784. Stanford University, Calif.: Annual Reviews, Inc., 1941.

This third volume of the annual review of physiology is published by the American Physiological Society under an editorial committee consisting of A. J. Carlson, J. F. Fulton, M. H. Jacobs, F. C. Mann and W. J. Meek. These reviews present critical analyses and searching appraisals of the outstanding contributions of the year in selected fields. The authors of each review have an intimate knowledge of the subjects under review and have exercised scrupulous care in the presentation of their subjects.

As usual, physiologic research presents much of interest to physical therapists. The reviews of special value to those using physical agents are: "The Physiological Effects of Radiant Energy" by Henry Laurens, Tulane University School of Medicine; "Temperature Regulation" by J. C. Scott, Hahnemann Medical College, and H. C. Bazett, University of Pennsylvania; "Respiration" by C. F. Schmidt and J. H. Comroe, Jr., University of Pennsylvania; "Muscle" by Wallace O. Fenn, University of Rochester, and "The Peripheral Circulation" by Victor E. Hall, Stanford University.

This review can be recommended to those physical therapists doing research on the effects of physical agents.

LECTURES ON CONDITIONED REFLEXES. VOLUME II: CONDITIONED REFLEXES AND PSYCHIATRY. By Ivan Petrovitch Pavlov. Translated and edited by W. Horsley Gantt, M. D., B. Sc., Associate in Psychiatry and Director Pavlovian Laboratory, Johns Hopkins University, Baltimore. Cloth. Price, $4. Pp. 199, with 7 illustrations. New York: International Publishers, 1941.

The name "Ivan Pavlov" stands today among the foremost great scientists of our time, and it is to be expected that any publications by this author will be outstanding contributions to modern scientific knowledge.

This volume is a collection of lectures on conditioned reflexes as related to psychiatry. For years the study of psychiatry has depended a great deal upon subjective approaches to its many problems. Pavlov's physiologic studies on his laboratory animals have lead him to see a new approach to the problems of mental and nervous phenomena. Particularly striking are his observations on the recognizable "personality types" in dogs utilized for his study. By his brilliant researches he has shown the way to a better understanding of abnormal behavior reactions in the human. Although there may be many who differ with this master's interpretation of his findings, no one can deny that this work will remain a classic.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. By W. A. Newman Dorland, A. M., M. D., F. A. C. S., Lieut.-Colonel, M. R. C., U. S. Army, Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association; Editor of "American Pocket Medical Dictionary." Nineteenth edition. Flexible or stiff binding. Plain, $7.00; thumb indexed, $7.50. Pp. 1647, with 914 illustrations. Philadelphia: W. B. Saunders, 1941.

This is a thoroughly revised edition of this popular dictionary. Over 2000 new words have been added. The terminology conforms to the accepted standards. The pronunciation of every word is given. There are anatomic tables of arteries, veins, muscles, nerves, etc., with colored illustrations; chemical formulas and symbols; signs and symptoms; abbreviations; 7 pages of a dosage table; clear descriptions and indications for the use of serum and vaccines; a section of 34 pages given the technics of 1300 tests, and medical biographies. These and many other features make this an outstanding dictionary that can be highly recommended to anyone in the medical field.

NEW AND NONOFFICIAL REMEDIES, 1941, CONTAINING DESCRIPTIONS OF THE ARTICLES WHICH STAND ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION OF JANUARY 1, 1941. Cloth. Price, $1.50. Pp. 691. Chicago: American Medical Association, 1941.

In this book are listed and described the articles that stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1st of the year of publication. The descriptions of accepted articles are based in part on investigations made by, or under the direction of the Council and in part on evidence or information supplied by the manufacturer or his agents. Statements made by those commercially interested are examined critically and admitted only when they are supported by other evidence or when they conform to known facts. This is a book which should be in the library of every physician.

THE TRAUMATIC NEUROSES OF WAR. By Abram Kardiner, M. D., Psychosomatic Medicine Monograph II-III. Published with the Sponsorship of the Committee on Problems of Neurotic Behavior, Division of Anthropology and Psychology, National Research Council, Washington, D. C. Paper. Price, $3. Pp. 258. Washington, D. C., 1941.

The subject of traumatic neuroses is again a very timely one in view of the "second world war." It was during the first world war that the true nature of "shellshock" was described and its relationship to everyday traumatic neuroses was established. Today it is well recognized that injury to the body, when followed by signs and symptoms of a neurosis, has served merely as the exciting factor which brings to the surface emotional problems which have been hidden, possibly for years, in the "nervous subsoil." Preexisting maladjustments are always in the background as predisposing material which needs but a match to bring it to light in the form of invalidism. In this presentation the author discusses the various types of psychoneurotic reactions and illnesses with numerous case histories of patients studied during the last war. It is, indeed, an excellent review of the subject and it is heartily recommended to anyone interested in the role of the nervous system in the so-called "functional illness," not only during war but also in civilian life.

Books Received

TREATMENT OF INFANTILE PARALYSIS IN THE ACUTE STAGE. By Sister Elizabeth Kenny, Brisbane, Australia. Cloth. Price, $3.50. Pp. 300, with 73 illustrations. Minneapolis: Bruce Publishing Company, 1941.

READING I'VE LIKED: A PERSONAL SELECTION DRAWN FROM TWO DECADES OF READING AND REVIEWING, PRESENTED WITH AN INFORMAL PROLOGUE AND VARIOUS COMMENTARIES. By Clifton Fadiman. Cloth. Price, $3. Pp. 908. New York: Simon and Schuster, 1941.

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Convention Calendar

Date	Organization	Place
Dec. 29-31, 1941	New York Association of Health, Physical Education and Recreation	Syracuse, N. Y.
Jan. 11-15, 1942	American Academy of Orthopedic Surgeons	Washington, D. C.
Mar. 30-Apr. 1	California Association of Health, Physical Education and Recreation	Sacramento, Calif.
April 13-16	Western Hospital Association (Physical Therapy Section, Wash., Ore., N. Calif., and S. Calif. Chapters, American Physio. Assoc.)	Seattle, Wash.
April 1-4	Central District Health and Physical Education Association	Des Moines, Iowa
April 9-11	Southwest Association of Health, Physical Education and Recreation	Albuquerque, N. Mex.
April 14-16	Tennessee State Medical Society	Memphis, Tenn.
April 15-17	Iowa State Medical Association	Des Moines, Iowa
	Hospital Association of Pennsylvania	Pittsburgh, Penna.
	Pennsylvania Physiotherapy Association	Pittsburgh, Penna.
April 15-18	American Association of Health, Physical Education and Recreation	New Orleans, La.
April 20-22	New Jersey State Nurses Association	Atlantic City N. J.
	State League of Nursing Education	Atlantic City N. J.
April 22	New Jersey State Organization for Public Health Nursing	Atlantic City N. J.
April 27-29	Missouri State Medical Association	Kansas City Mo.

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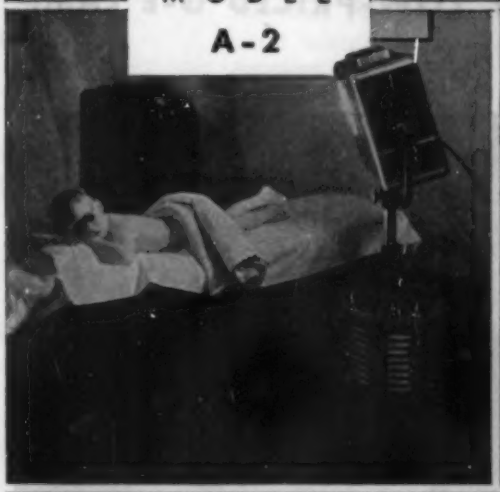

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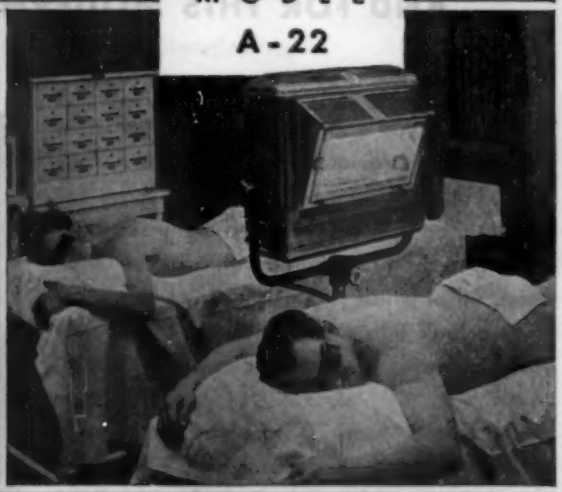

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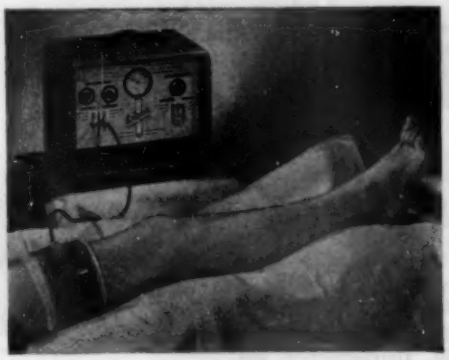

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